Altova DiffDog Server 2025

User & Reference Manual

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1 Introduction

DiffDog Server is powerful differencing software that makes it possible to automate high-volume comparisons and generate diff reports. DiffDog Server is available on Windows, Linux, and macOS systems.

DiffDog Server supports the following types of comparisons:

- Binary, text, and XML files
- Microsoft Word documents
- Two-way and three-way file diffs
- Directories (including ZIP archives)
- URLs
- Databases
- CSV to CSV
- CSV to Database

You can compare files directly on the server machine where DiffDog Server is installed, or you can call a comparison remotely from a client machine. The DiffDog Server installation includes a portable client executable, which can be copied to multiple machines within your organization, thus enabling you to call a running DiffDog Server remotely.

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1.1 Features

The list below summarizes the main features of DiffDog Server.

- *Command-line interface.* DiffDog Server runs as a service. You can run comparisons by invoking DiffDog Server from the command line interface or through executable scripts.

- *Run comparisons on the server or remotely.* You can compare files directly on the server machine where DiffDog Server is installed by using the DiffDog Server executable. Alternatively, you can call a comparison remotely from a client machine. The DiffDog Server installation includes a portable client executable (DiffDog Command Line Client), which can be copied to multiple machines within your organization, thus enabling you to call a running DiffDog Server remotely.

- *Cross-platform.* DiffDog Server and DiffDog Command Line Client run on Linux, macOS, and Windows.

- *URL Comparisons.* In addition to files and directories, you can also compare file or directory URLs. For example, you can compare a page like *http://www.example.org/page1.html* with *http://www.example.org/page2.html*. Combinations between URL and files are also possible, for example, *http://www.example.org/page1.html* with *C:\page2.html*.

- *Three-way comparisons.* In addition to standard two-side comparisons that involve a "left" side and a "right" side, you can also perform three-way comparisons (when comparing files). This is useful, for example, when two different versions exist of the same original file, and you need to cross-compare all versions.

- *Word document comparisons.* Comparison of Microsoft Word 2003 or later documents (**`.docx`**, **`.dotx`**) is also supported. Microsoft Word is not required to be installed in order to perform such comparisons.

- *Binary, text, and XML.* Depending on the kind of files you are comparing, you can choose between any of the following comparison modes: binary, text, or XML. Alternatively, you can let the application detect the comparison mode automatically based on file extension. For even more advanced needs, you can create custom rules to choose a specific mode automatically based on file extension.

- *Advanced filters and comparison options*. You can flexibly include or exclude files or directories from a comparison by means of filters. Additional options are available that help you deal with case-sensitive versus insensitive comparisons, ignoring files based on size or modification time, as well as various ways to treat special characters like spaces, tabs, or carriage returns.

- *Comparison of database data.* You can perform comparisons of recordsets originating from a database table, view, or a custom SQL query. The source databases can be of different kinds and may be local file-based databases such as SQLite or databases running on a remote database server, such as SQL Server. You can configure multiple such data comparisons by defining all the database connection details and other parameters in an **`.ini`** configuration file. You can then supply named data comparison jobs as arguments to the `data-diff` command and run multiple comparisons in a single call of the executable.

- *Comparison of CSV files.* You can perform side-by-side comparisons of tabular data from comma-separated or tab-separated values (CSV and TSV) files. You can also compare a CSV file with a database table, view or recordset.

- *Integration with DiffDog desktop.* In DiffDog, you can create comparison files (`.filedif`, `.dirdif` files) that store the settings for comparing two objects. If DiffDog Server runs on Windows, you can use these comparison files to repeat comparisons. This enables you to automate or integrate frequently-used comparisons into your custom scripts or processes. On Windows, any custom XML or directory filters that you have created in DiffDog can also be invoked as command line options when you run a comparison. Running database comparison files (`.dbdif`) is possible on Linux and macOS with limitations (*see below*).

- *Get comparison results as text, XML, SQL, or HTML.* When performing a comparison, you can choose the format in which comparison results are reported: text, XML, or SQL. The latter is applicable when the right side of the comparison is a database and it consists of SQL statements that merge differences from the left side to the right side of the comparison (**`INSERT`**, **`UPDATE`**, and **`DELETE`** statements).

Limitations

- The connection between client and server is currently unencrypted (plain HTTP).
- Running file and directory comparison files (`.filedif`, `.dirdif`) created with DiffDog is supported only on Windows. This limitation does not apply if you configure the comparison job directly in DiffDog Server.
- Running database data comparison files (`.dbdif`) created with DiffDog is supported only on Windows if CSV files are involved in the comparison. This limitation does not apply if you configure the comparison job directly in DiffDog Server. For the support details applicable when running database comparisons, see Supported Databases 53.

1.2 How It Works

After installation, the DiffDog Server files, including the executable files that are used at the command line, are copied to the default program installation directory (*see table below*).

Windows	`C:\Program Files\Altova\DiffDogServer2025\` `C:\Program Files (x86)\Altova\DiffDogServer2025\`
Linux	`/opt/Altova/DiffDogServer2025/`
macOS	`/usr/local/Altova/DiffDogServer2025/`

DiffDog Server executables

The program installation directory (*table above*) contains two executables that you will work with: the DiffDog Server executable in the **bin** subdirectory and the DiffDog Command Line Client executable in the **cmdlclient** subdirectory.

DiffDog Server executable

The DiffDog Server executable in the **bin** subdirectory provides both data-differencing commands as well as configuration-related commands (for licensing DiffDog Server, starting it as a service, resetting it to the default configuration, etc). The server executable is called using the following syntax:

```
diffdogserver [options] <command> [arguments]
```

DiffDog Command Line Client

The DiffDog Command Line Client executable in the **cmdlclient** subdirectory provides data-differencing commands. The client executable reads a client configuration file, which contains the connection information for DiffDog Server, and calls DiffDog Server to provide data-differencing commands. This not only allows for directories or files that are on the client to be compared with each other, but also enables comparisons between comparison objects that are on different machines (on the client and on the server). The client executable is called using the following syntax:

```
DiffDogCmdlClient [options] <command> [arguments]
```

Important points

Note the following points:

- To call the executable (client or server) by name only, that is, without the full path, add the program installation directory to your system's **PATH** variable.
- A DiffDog Command Line Client can run on the same machine as DiffDog Server, or on a different machine. Having a client and DiffDog Server on different machines enables you to compare a client-side file/directory with a remote server-side file/directory, or vice versa.
- The client and the server can be on different operating systems. The advantage of such a setup is that it enables you to run comparisons from virtually any client configured to communicate with the server. For information about how to configure the server to accept calls from remote clients, see Remote Client Setup 36.
-
- On Linux, use an all-lowercase executable name.
- On Linux and macOS, you might need to add `./` before the name of the executable when calling it from the current directory of the command shell.

For detailed information about setting up the server and the client, see Configure Server and Clients [34]. The CLI commands are organized into two parts: (i) data-differencing and other commands [78] that can be used with both server and client executables; (ii) administration commands [105] that are provided by the server executable.

1.3 About This Documentation

This documentation is organized into the following parts:

- Installation and Licensing of DiffDog Server 12 describes the key installation and licensing steps on different operating systems (Windows, Linux, and macOS).
- Configure Server and Clients 34 explains important points relating to configuration, such as how to set up a client machine, how to create aliases for protected server-side folders, and information about the server and client configuration files.
- Comparisons 48 provides an overview of comparisons, with special emphasis on the comparison of directories, Word documents, and databases and CSV files.
- Comparison Results 68 explains how to interpret comparison results, especially the reports in text and XML formats.
- The command line documentation is divided into two parts: (i) data-differencing and other commands 78 that can be used with both server and client executables; (ii) administration commands 105 that are provided by the server executable.

2 Installation and Licensing

This section describes installation, licensing and other setup procedures. It is organized into the following sections:

2.1 Setup on Windows

This section describes the installation[13] and licensing of DiffDog Server on Windows systems. The setup comprises the following steps:

1. Install DiffDog Server[13]
2. Install LicenseServer[17]
3. Start LicenseServer and DiffDog Server[19]
4. Register DiffDog Server with LicenseServer[20]
5. Assign a license to DiffDog Server[20]

The setup steps described above do not need to occur in exactly the same order in which they are listed. However, you do need to install before you start. And you do need to register DiffDog Server with LicenseServer before you can assign a license to DiffDog Server from LicenseServer.

System requirements (Windows)

Note the following system requirements:

- Windows 10, Windows 11
- Windows Server 2016 or newer

Prerequisites

Note the following prerequisites:

- Perform installation as a user with administrative privileges.
- From version 2021 onwards, a 32-bit version of DiffDog Server cannot be installed over a 64-bit version, or a 64-bit version over a 32-bit version. You must either (i) remove the older version before installing the newer version or (ii) upgrade to a newer version that is the same bit version as your older installation.

2.1.1 Install on Windows

Installing DiffDog Server

To install DiffDog Server, download the installation package from the Altova Download Center (https://www.altova.com/download.html), run it and follow the on-screen instructions. You can select your installation language from the box in the lower left area of the wizard. Note that this selection also sets the default language of DiffDog Server. You can change the language later from the command line.

After installation, the DiffDog Server executable will be located by default at the following path:

```
<ProgramFilesFolder>\Altova\DiffDogServer2025\bin\DiffDogServer.exe
```

Uninstall DiffDog Server

Uninstall DiffDog Server as follows:

1. Right-click the Windows **Start** button and select **Settings**.

2. Open the Control Panel (start typing "Control Panel" and click the suggested entry).
3. Under *Programs*, click **Uninstall a program**.
4. In Control Panel, select DiffDog Server and click **Uninstall**.

Evaluation license

During the installation process, you will be given the option of requesting a 30-day evaluation license for DiffDog Server. After submitting the request, an evaluation license will be sent to the email address you registered.

2.1.2 Install on Windows Server Core

Windows Server Core is a minimal Windows installation that does not use a number of GUI features. You can install DiffDog Server on a Windows Server Core machine as follows:

1. Download the DiffDog Server installer executable from the Altova website. This file is named **`DiffDogServer.exe`**. Make sure to choose the executable matching your server platform (32-bit or 64-bit).
2. On a standard Windows machine (not the Windows Server Core machine), run the command **`DiffDogServer.exe /u`**. This unpacks the **`.msi`** file to the same folder as the installer executable.
3. Copy the unpacked **`.msi`** file to the Windows Server Core machine.
4. If you are updating an earlier version of DiffDog Server, shut down DiffDog Server before carrying out the next step.
5. Use the **`.msi`** file for the installation by running the command **`msiexec /i DiffDogServer.msi`**. This starts the installation on Windows Server Core.

Note: When upgrading to a major version, you can retain your DiffDog Server settings by using the properties listed in the subsections of this section: (i) Webserver Properties 15, (ii) SSL-Webserver Properties 16, and (iii) Service Properties 16.

Important: Keep the MSI file!

Note the following points:

- Keep the extracted **`.msi`** file in a safe place. You will need it later to uninstall, repair, or modify your installation.
- If you want to rename the MSI file, do this before you install DiffDog Server.
- The MSI filename is stored in the registry. You can update its name there if the filename has changed.

Register DiffDog Server with LiceseServer

If you are installing DiffDog Server for the first time or are upgrading to a **major version**, you will need to register DiffDog Server with an Altova LicenseServer on your network. If you are upgrading to a non-major version of DiffDog Server, then the previous LicenseServer registration will be known to the installation and there is no need to register DiffDog Server with LicenseServer. However, if you want to change the LicenseServer that is used by DiffDog Server at any time, then you will need to register DiffDog Server with the new LicenseServer.

To register DiffDog Server with an Altova LicenseServer during installation, run the installation command with the **REGISTER_WITH-LICENSE_SERVER** property, as listed below, providing the name or address of the LicenseServer machine as the value of the property, for example:

```
msiexec /i DiffDogServer.msi REGISTER_WITH_LICENSE_SERVER="localhost"
```

To register DiffDog Server with an Altova LicenseServer after installation, run the following command:

```
msiexec /r DiffDogServer.msi REGISTER_WITH_LICENSE_SERVER="<MyLS-IPAddress>"
```

Useful commands

Given below are a set of commands that are useful in the installation context.

To test the return value of the installation, run a script similar to that below. The return code will be in the `%errorlevel%` environment variable. A return code of **0** indicates success.

```
start /wait msiexec /i DiffDogServer.msi /q
echo %errorlevel%
```

For a silent installation with a return code and a log of the installation process:

```
start /wait msiexec /i DiffDogServer.msi /q /L*v! <pathToInstallLogFile>
```

To modify the installation:

```
msiexec /m DiffDogServer.msi
```

To repair the installation:

```
msiexec /r DiffDogServer.msi
```

To uninstall DiffDog Server:

```
msiexec /x DiffDogServer.msi
```

To uninstall DiffDog Server silently and report the detailed outcome in a log file:

```
start /wait msiexec /x DiffDogServer.msi /q /L*v! <pathToUninstallLogFile>
```

To install DiffDog Server using another langauge (available language codes are: German=`de`; Spanish=`es`; French=`fr`):

```
msiexec /i DiffDogServer.msi INSTALLER_LANGUAGE=<languageCode>
```

Note: On Windows Server Core, the charts functionality of DiffDog Server will not be available.

2.1.2.1 Webserver Properties

You can configure the DiffDog Server web server by using the properties given below. To set a property, run the installation command with the property setting appended, like this:

```
msiexec /i DiffDogServer.msi DD_WebServer_Host=127.0.0.1
```

List of properties

Properties of the DiffDog Server web server:

DD_WebServer_Host=<IP4 Address>
Use **127.0.0.1** if you want to access the web server from this machine only. Use **0.0.0.0** to make the web server accessible globally.

DD_WebServer_Port=<Port Number>
Specifies the port that is used to access the web server.

DD_WebServer_Enabled=<0 or 1>
Select **1** to enable listening at the currently set port. Select **0** to disable listening at this port.

2.1.2.2 SSL-Webserver Properties

You can configure the DiffDog Server SSL web server by using the properties given below. To set a property, run the installation command with the property setting appended, like this:

```
msiexec /i DiffDogServer.msi DD_SSLWebServer_Host=127.0.0.1
```

List of properties

To configure the DiffDog Server SSL web server, use the following properties:

DD_SSLWebServer_Host=<IP4 Address>
Use **127.0.0.1** if you want to access the SSL web server (for encrypted transmission) from this machine only. Use **0.0.0.0** to make the SSL web server accessible globally.

DD_SSLWebServer_Port=<Port Number>
Specifies the port that is used to access the SSL web server (for encrypted transmission).

DD_SSLWebServer_Enabled=<0 or 1>
Select **1** to enable listening at the currently set port. Select **0** to disable listening at this port.

DD_SSLWebServer_Certificate=<Path-to-certificate-file>
Full path to a SSL certificate, enclosed in double-quotes.

DD_SSLWebServer_PrivateKey=<Path-to-private-key-file>
Full path to a private key file, enclosed in double-quotes.

2.1.2.3 Service Properties

You can configure the DiffDog Server service by using the properties given below. To set a property, run the installation command with the property setting appended, like this:

```
msiexec /i DiffDogServer.msi DD_Service_DisplayName=DiffDogServer
```

List of properties

To configure DiffDog Server services, use the following properties:

DD_Service_DisplayName=<Serveice Display Name>
Name that will be displayed for the service. Enclose the name in double quotes.

DD_Service_StartType=<Startup Type>
Specifies how the service is started during a system start-up. Values can be one of: **auto | auto-delayed | demand | disabled**.

DD_Service_Username=<UserName>
Specifies the log-on user for the service. Use one of: **LocalSystem | NT Authority\LocalService | NT Authority\NetworkService | <any user with relevant rights>**.

DD_Service_Password=<Password>
The password of the service's start user in plain text.(Hint: Use the installer's user interface to avoid entering plain text passwords.) No password is required if the user name is any of: **LocalSystem | NT Authority\LocalService | NT Authority\NetworkService**.

2.1.3 Install LicenseServer (Windows)

In order for DiffDog Server to work, it must be licensed via an Altova LicenseServer on your network. When you install DiffDog Server on Windows systems, you can install LicenseServer together with DiffDog Server. If a LicenseServer is already installed on your network, you do not need to install another one—unless a newer version of LicenseServer is required. (*See next point, LicenseServer versions*.)

During the installation process of DiffDog Server, check or uncheck the option for installing LicenseServer as appropriate.

Note the following points:

- If you have not installed LicenseServer yet, leave the default settings as is. The wizard will install the latest version on the computer where you are running the wizard.
- If you have not installed LicenseServer yet and want to install Altova LicenseServer on another computer and use it from there, then clear the check box *Install Altova LicenseServer on this machine* and choose **Register Later**. In this case, you will need to install LicenseServer separately on the other machine and register DiffDog Server afterwards with the LicenseServer on that machine.
- If LicenseServer has already been installed on your computer but is a lower version than the one that would be installed by the installation wizard, then leave the wizard's default setting (for upgrading to the newer version) as is. In this case, the installation wizard will automatically upgrade your LicenseServer version. The existing registration and licensing information will be carried over to the new version of LicenseServer.
- If LicenseServer has already been installed on your computer or network and has the same version as the one indicated by the wizard, do the following:
  - Clear the check box *Install Altova LicenseServer on this machine*.
  - Under *Register this product with*, choose the LicenseServer with which you want to register DiffDog Server. Alternatively, choose **Register Later**. Note that you can always select **Register Later** if

you want to ignore the LicenseServer associations and carry on with the installation of DiffDog Server.

For information, see how to register[20] and license[20] DiffDog Server with Altova LicenseServer. Also see the LicenseServer documentation for more detailed information.

LicenseServer versions

- Altova products must be licensed either (i) with a version of LicenseServer that corresponds to the installed DiffDog Server version or (ii) with a later version of LicenseServer.
- The LicenseServer version that corresponds to the current version of DiffDog Server is ***3.17***.
- On Windows, you can install the corresponding version of LicenseServer as part of the DiffDog Server installation or install LicenseServer separately. On Linux amd macOS, you must install LicenseServer separately.
- Before a newer version of LicenseServer is installed, any older one must be de-installed.
- At the time of LicenseServer de-installation, all registration and licensing information held in the older version of LicenseServer will be saved to a database on your server machine. This data will be imported automatically into the newer version when the newer version is installed.
- LicenseServer versions are backwards compatible. They will work with older versions of DiffDog Server.
- The latest version of LicenseServer available on the Altova website. This version will work with any current or older version of DiffDog Server.
- The version number of the currently installed LicenseServer is given at the bottom of the LicenseServer configuration page (all tabs).

2.1.4 Network and Service Configuration (Windows)

During the installation of DiffDog Server, you can configure settings for accessing DiffDog Server via the network and for running DiffDog Server as a Windows service.
The settings listed below are available. Leave the default settings as they are if they are acceptable to you or if you are not sure about them. If you wish to change a setting, select its **Change** button (*see screenshot above*).

- The port to use for unencrypted communication with DiffDog Server.
- Windows service settings. These include:
  - The way DiffDog Server should start as a Windows service: automatic, on demand, delayed automatic, or disabled.
  - The user account to be used by DiffDog Server for the Windows service: *Local System, Local Service, Network Service,* or *Other User*. If you select *Other User*, you can set the username and password of this user, similar to how this is done in the Windows Services management console. Note that the selected user must have read/write access to **`C:\ProgramData\Altova`**. Otherwise, the installation or startup could fail.

You can change the settings after installation. To modify the Windows service configuration, open the Windows Services management console (by typing **`Services.msc`** in a command line window) and change the required service from there.

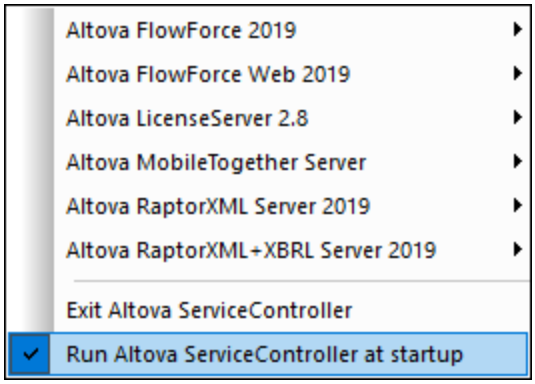
2.1.5 Start LicenseServer, DiffDog Server (Windows)

Altova LicenseServer (LicenseServer for short) and DiffDog Server are both started via Altova ServiceController.

Altova ServiceController

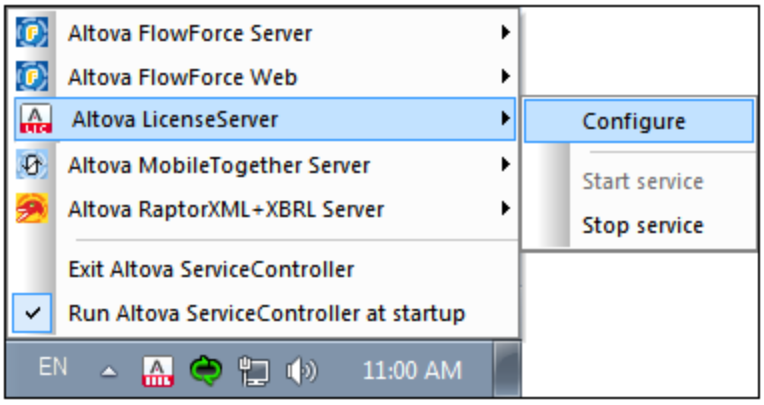
Altova ServiceController (ServiceController for short) is an application for conveniently starting, stopping and configuring Altova services **on Windows systems**. ServiceController is installed with Altova LicenseServer and with Altova server products that are installed as services (DiffDog Server, FlowForce Server, Mobile Together Server, and RaptorXML(+XBRL) Server). ServiceController can be accessed via the system tray (*screenshot below*).

To specify that ServiceController starts automatically on logging in to the system, click the **ServiceController** icon in the system tray to display the **ServiceController** menu (*screenshot below*), and then toggle on the command **Run Altova ServiceController at Startup**. (This command is toggled on by default.) To exit ServiceController, click the **ServiceController** icon in the system tray and, in the menu that appears (*see screenshot below*), click **Exit Altova ServiceController**.



Start LicenseServer

To start LicenseServer, click the **ServiceController** icon in the system tray, hover over **Altova LicenseServer** in the menu that pops up (*see screenshot below*), and then select **Start Service** from the LicenseServer submenu. If LicenseServer is already running, then the *Start Service* option will be disabled. You can also stop the service via ServiceController.



Start DiffDog Server

To start DiffDog Server, click the **ServiceController** icon in the system tray, hover over **Altova DiffDog Server** in the menu that pops up, and then select **Start Service** from the DiffDog Server submenu. If DiffDog Server is already running, the *Start Service* option will be disabled. You can also stop the service via ServiceController.

2.1.6 Register DiffDog Server (Windows)

To be able to license DiffDog Server from Altova LicenseServer, DiffDog Server must be registered with LicenseServer. To register DiffDog Server from the command line interface, use the `licenseserver` command and supply the address of the LicenseServer machine (*see below*).

```
DiffDogServer licenseserver [options] ServerName-Or-IP-Address
```

For example, if `localhost` is the name of the server on which LicenseServer is installed, use the following command:

```
DiffDogServer licenseserver localhost
```

After successful registration, go to the Client Management tab of LicenseServer's configuration page to assign a license to DiffDog Server.

For more information about registering Altova products with LicenseServer, see the LicenseServer user manual.

2.1.7 Assign License (Windows)

After successfully registering DiffDog Server, it will be listed in the Client Management tab of the configuration page of LicenseServer. Go there and assign a license to DiffDog Server.

The licensing of Altova server products is based on the number of processor cores available on the product machine. For example, a dual-core processor has two cores, a quad-core processor four cores, a hexa-core

processor six cores, and so on. The number of cores licensed for a product must be greater than or equal to the number of cores available on that server machine, whether the server is a physical or virtual machine. For example, if a server has eight cores (an octa-core processor), you must purchase at least one 8-core license. You can also combine licenses to achieve the core count. So, two 4-core licenses can also be used for an octa-core server instead of one 8-core license.

If you are using a computer server with a large number of CPU cores but only have a low volume to process, you may also create a virtual machine that is allocated a smaller number of cores and purchase a license for that number. Such a deployment, of course, would have less processing speed than if all available cores on the server were utilized.

Note: Each Altova server product license can be used for only one client machine at a time, even if the license has unused licensing capacity. (A client machine is the machine on which the Altova server product is installed.) For example, if a 10-core license is used for a client machine that has 6 CPU cores, then the remaining 4 cores of licensing capacity cannot be used simultaneously for another client machine.

Single-thread execution
If an Altova server product allows single-thread execution, an option for *Single-thread execution* will be available. In these cases, if an Altova server-product license for only one core is available in the license pool, a machine with multiple cores can be assigned this one-core license. In such a case, the machine will run that product on a single core. Processing will therefore be slower, because multi-threading (which is possible on multiple cores) will not be available. The product will be executed in single thread mode on that machine.

To assign a single-core license to a multiple-core machine in LicenseServer, select the *Limit to single thread execution* check box for that product.

Estimate of core requirements
There are various external factors that influence the data volumes and processing times your server can handle (for example: the hardware, the current load on the CPU, and memory allocation of other applications running on the server). In order to measure performance as accurately as possible, test the applications in your environment with data volumes and in conditions that approximate as closely as possible to real business situations.

2.2 Setup on Linux

This section describes the installation[22] and licensing of DiffDog Server on Linux systems (Debian, Ubuntu, CentOS, RedHat). The setup comprises the following steps:

1. Install DiffDog Server[22]
2. Install LicenseServer[24]
3. Start LicenseServer[24]
4. Register DiffDog Server with LicenseServer[25]
5. Assign a license to DiffDog Server[26]

The setup steps described above do not need to occur in exactly the same order in which they are listed. However, you do need to install before you start. And you do need to register DiffDog Server with LicenseServer before you can assign a license to DiffDog Server from LicenseServer.

System requirements (Linux)

- Red Hat Enterprise Linux 7 or newer
- CentOS 7, CentOS Stream 8
- Debian 10 or newer
- Ubuntu 20.04, 22.04, 24.04
- AlmaLinux 9.0
- Rocky Linux 9.0

Prerequisites

- Perform installation either as **root** user or as a user with **sudo** privileges.
- The previous version of DiffDog Server must be uninstalled before a new one is installed.
- The following libraries are required as a prerequisite to install and run the application. If the packages below are not already available on your Linux machine, run the `yum` command (or `apt-get` if applicable) to install them.

CentOS, RedHat	Debian	Ubuntu
krb5-libs	libgssapi-krb5-2	libgssapi-krb5-2

2.2.1 Install on Linux

DiffDog Server is available for installation on Linux systems. Do the installation either as `root` user or a user with `sudo` privileges.

Uninstall DiffDog Server

Before you install DiffDog Server, you should uninstall any older version.

To check which Altova server products are installed:

```
[Debian, Ubuntu]:   dpkg --list | grep Altova
[CentOS, RedHat]:   rpm -qa | grep server
```

To uninstall an old version of DiffDog Server:

```
[Debian, Ubuntu]:   sudo dpkg --remove diffdogserver
[CentOS, RedHat]:   sudo rpm -e diffdogserver
```

On Debian and Ubuntu systems, it might happen that DiffDog Server still appears in the list of installed products after it has been uninstalled. In this case, run the **purge** command to clear DiffDog Server from the list. You can also use the **purge** command *instead* of the **remove** command listed above.

```
[Debian, Ubuntu]:   sudo dpkg --purge diffdogserver
```

Download the DiffDog Server Linux package

DiffDog Server installation packages for the following Linux systems are available at the Altova website.

Distribution	Package extension
Debian	.deb
Ubuntu	.deb
CentOS	.rpm
RedHat	.rpm

After downloading the Linux package, copy it to any directory on the Linux system. Since you will need to license DiffDog Server with an Altova LicenseServer, you may want to download LicenseServer from the Altova website at the same time as you download DiffDog Server.

Install DiffDog Server

In a terminal window, switch to the directory where you copied the Linux package. For example, if you copied it to a user directory called `MyAltova` that is located in the `/home/User` directory, switch to this directory as follows:

```
cd /home/User/MyAltova
```

Install DiffDog Server using the relevant command:

```
[Debian]:   sudo dpkg --install diffdogserver-2025-debian.deb
[Ubuntu]:   sudo dpkg --install diffdogserver-2025-ubuntu.deb
[CentOS]:   sudo rpm -ivh diffdogserver-2025-1.x86_64.rpm
[RedHat]:   sudo rpm -ivh diffdogserver-2025-1.x86_64.rpm
```

You may need to adjust the name of the package above to match the current release or service pack version.

The DiffDog Server package will be installed in the following folder:

```
/opt/Altova/DiffDogServer2025
```

2.2.2 Install LicenseServer (Linux)

In order for DiffDog Server to work, it must be licensed via an Altova LicenseServer on your network. Download LicenseServer from the Altova website and copy the package to any directory. Install it just like you installed DiffDog Server (*see previous topic* 22).

```
[Debian]:   sudo dpkg --install licenseserver-3.17-debian.deb
[Ubuntu]:   sudo dpkg --install licenseserver-3.17-ubuntu.deb
[CentOS]:   sudo rpm -ivh licenseserver-3.17-1.x86_64.rpm
[RedHat]:   sudo rpm -ivh licenseserver-3.17-1.x86_64.rpm
```

The LicenseServer package will be installed at the following path:

```
/opt/Altova/LicenseServer
```

For information, see how to register 25 and license 26 DiffDog Server with Altova LicenseServer. Also see the LicenseServer documentation for more detailed information.

LicenseServer versions

- Altova products must be licensed either (i) with a version of LicenseServer that corresponds to the installed DiffDog Server version or (ii) with a later version of LicenseServer.
- The LicenseServer version that corresponds to the current version of DiffDog Server is ***3.17***.
- On Windows, you can install the corresponding version of LicenseServer as part of the DiffDog Server installation or install LicenseServer separately. On Linux amd macOS, you must install LicenseServer separately.
- Before a newer version of LicenseServer is installed, any older one must be de-installed.
- At the time of LicenseServer de-installation, all registration and licensing information held in the older version of LicenseServer will be saved to a database on your server machine. This data will be imported automatically into the newer version when the newer version is installed.
- LicenseServer versions are backwards compatible. They will work with older versions of DiffDog Server.
- The latest version of LicenseServer available on the Altova website. This version will work with any current or older version of DiffDog Server.
- The version number of the currently installed LicenseServer is given at the bottom of the LicenseServer configuration page (all tabs).

2.2.3 Start LicenseServer, DiffDog Server (Linux)

Start Altova LicenseServer and DiffDog Server either as `root` user or a user with `sudo` privileges.

Start LicenseServer

To correctly register and license DiffDog Server with LicenseServer, LicenseServer must be running as a daemon on the network. Start LicenseServer as a daemon with the following command:

```
sudo systemctl start licenseserver
```

If at any time you need to stop LicenseServer, replace **`start`** with **`stop`** in the command above. For example:

```
sudo systemctl stop licenseserver
```

Start DiffDog Server

Start DiffDog Server as a daemon with the following command:

```
sudo systemctl start diffdogserver
```

If at any time you need to stop DiffDog Server, replace **start** with **stop** in the command above. For example:

```
sudo systemctl stop diffdogserver
```

Check status of daemons

To check if a daemon is running, run the following command, replacing **<servicename>** with the name of the daemon you want to check:

```
sudo service <servicename> status
```

2.2.4 Register DiffDog Server (Linux)

To be able to license DiffDog Server from Altova LicenseServer, DiffDog Server must be registered with LicenseServer.

To register DiffDog Server, go to its CLI and use the `licenseserver` command:

```
sudo /opt/Altova/DiffDogServer2025/bin/diffdogserver licenseserver [options]
ServerName-Or-IP-Address
```

For example, if `localhost` is the name of the server on which LicenseServer is installed:

```
sudo /opt/Altova/DiffDogServer2025/bin/diffdogserver licenseserver localhost
```

In the command above, `localhost` is the name of the server on which LicenseServer is installed. Notice also that the location of the DiffDog Server executable is:

```
/opt/Altova/DiffDogServer2025/bin/
```

After successful registration, go to the Client Management tab of LicenseServer's configuration page to assign a license to DiffDog Server.

For more information about registering Altova products with LicenseServer, see the LicenseServer user manual.

2.2.5 Assign License (Linux)

After successfully registering DiffDog Server, it will be listed in the Client Management tab of the configuration page of LicenseServer. Go there and assign a license to DiffDog Server.

The licensing of Altova server products is based on the number of processor cores available on the product machine. For example, a dual-core processor has two cores, a quad-core processor four cores, a hexa-core processor six cores, and so on. The number of cores licensed for a product must be greater than or equal to the number of cores available on that server machine, whether the server is a physical or virtual machine. For example, if a server has eight cores (an octa-core processor), you must purchase at least one 8-core license. You can also combine licenses to achieve the core count. So, two 4-core licenses can also be used for an octa-core server instead of one 8-core license.

If you are using a computer server with a large number of CPU cores but only have a low volume to process, you may also create a virtual machine that is allocated a smaller number of cores and purchase a license for that number. Such a deployment, of course, would have less processing speed than if all available cores on the server were utilized.

Note: Each Altova server product license can be used for only one client machine at a time, even if the license has unused licensing capacity. (A client machine is the machine on which the Altova server product is installed.) For example, if a 10-core license is used for a client machine that has 6 CPU cores, then the remaining 4 cores of licensing capacity cannot be used simultaneously for another client machine.

Single-thread execution
If an Altova server product allows single-thread execution, an option for *Single-thread execution* will be available. In these cases, if an Altova server-product license for only one core is available in the license pool, a machine with multiple cores can be assigned this one-core license. In such a case, the machine will run that product on a single core. Processing will therefore be slower, because multi-threading (which is possible on multiple cores) will not be available. The product will be executed in single thread mode on that machine.

To assign a single-core license to a multiple-core machine in LicenseServer, select the *Limit to single thread execution* check box for that product.

Estimate of core requirements
There are various external factors that influence the data volumes and processing times your server can handle (for example: the hardware, the current load on the CPU, and memory allocation of other applications running on the server). In order to measure performance as accurately as possible, test the applications in your environment with data volumes and in conditions that approximate as closely as possible to real business situations.

2.3 Setup on macOS

This section describes the installation[27] and licensing of DiffDog Server on macOS systems. The setup comprises the following steps:

1. Install DiffDog Server[27]
2. Install LicenseServer[28]
3. Start LicenseServer[29]
4. Register DiffDog Server with LicenseServer[29]
5. Assign a license to DiffDog Server[30]

The setup steps described above do not need to occur in exactly the same order in which they are listed. However, you do need to install before you start. And you do need to register DiffDog Server with LicenseServer before you can assign a license to DiffDog Server from LicenseServer.

System Requirements (macOS)

Note the following system requirement:

- macOS 12 or newer

Prerequisites

Note the following prerequisites:

- Ensure that Altova LicenseServer has been installed and is running.
- Perform installation either as the `root` user or as a user with `sudo` privileges.
- The previous version of DiffDog Server must be uninstalled before a new one is installed.
- The macOS machine must be configured so that its name resolves to an IP address. This means that you must be able to successfully ping the host name from the Terminal using the command **`ping <hostname>`**.

2.3.1 Install on macOS

This topic describes the installation and setup of DiffDog Server on macOS systems.

Uninstall DiffDog Server

Before uninstalling DiffDog Server, stop the service with the following command:

```
sudo launchctl unload /Library/LaunchDaemons/com.altova.DiffDogServer2025.plist
```

To check whether the service has been stopped, open the Activity Monitor in Finder and make sure that DiffDog Server is not in the list. In the Applications folder in Finder, right-click the DiffDog Server icon and select **Move to Trash**. The application will be moved to Trash. You will, however, still need to remove the application from the `usr` folder. Do this with the following command:

```
sudo rm -rf /usr/local/Altova/DiffDogServer2025/
```

If you need to uninstall an old version of Altova LicenseServer, you must first stop it running as a service. Do this with the following command:

```
sudo launchctl unload /Library/LaunchDaemons/com.altova.LicenseServer.plist
```

To check whether the service has been stopped, open the Activity Monitor in Finder and make sure that LicenseServer is not in the list. Then proceed to uninstall in the same way as described above for DiffDog Server.

Install DiffDog Server

To install DiffDog Server, do the following:

1. Download the disk image (**.dmg**) file of DiffDog Server from the Altova website (https://www.altova.com/download.html).
2. Click to open the downloaded disk image (**.dmg**). This causes the DiffDog Server installer to appear as a new virtual drive on your computer.
3. On the new virtual drive, double-click the installer package (**.pkg**).
4. Go through the successive steps of the installer wizard. These are self-explanatory and include one step in which you have to agree to the license agreement before being able to proceed.
5. To eject the drive after installation, right-click it and select **Eject**.

The DiffDog Server package will be installed in the folder:

/usr/local/Altova/DiffDogServer2025 (application binaries)
/var/Altova/DiffDogServer (data files: database and logs)

The DiffDog Server server daemon starts automatically after installation and a re-boot of the machine. You can always start DiffDog Server as a daemon with the following command:

```
sudo launchctl load /Library/LaunchDaemons/com.altova.DiffDogServer2025.plist
```

2.3.2 Install LicenseServer (macOS)

Altova LicenseServer can be downloaded from the Altova website (https://www.altova.com/download.html). Carry out the installation as described here[27].

The LicenseServer package will be installed in the following folder:

```
/usr/local/Altova/LicenseServer
```

For information, see how to register[29] and license[30] DiffDog Server with Altova LicenseServer. Also see the LicenseServer documentation for more detailed information.

LicenseServer versions

- Altova products must be licensed either (i) with a version of LicenseServer that corresponds to the installed DiffDog Server version or (ii) with a later version of LicenseServer.
- The LicenseServer version that corresponds to the current version of DiffDog Server is ***3.17***.
- On Windows, you can install the corresponding version of LicenseServer as part of the DiffDog Server

installation or install LicenseServer separately. On Linux amd macOS, you must install LicenseServer separately.

- Before a newer version of LicenseServer is installed, any older one must be de-installed.
- At the time of LicenseServer de-installation, all registration and licensing information held in the older version of LicenseServer will be saved to a database on your server machine. This data will be imported automatically into the newer version when the newer version is installed.
- LicenseServer versions are backwards compatible. They will work with older versions of DiffDog Server.
- The latest version of LicenseServer available on the Altova website. This version will work with any current or older version of DiffDog Server.
- The version number of the currently installed LicenseServer is given at the bottom of the LicenseServer configuration page (all tabs).

2.3.3 Start LicenseServer, DiffDog Server (macOS)

Start Altova LicenseServer and DiffDog Server either as `root` user or a user with `sudo` privileges.

Start LicenseServer

To correctly register and license DiffDog Server with LicenseServer, LicenseServer must be running as a daemon. Start LicenseServer as a daemon with the following command:

```
sudo launchctl load /Library/LaunchDaemons/com.altova.LicenseServer.plist
```

If at any time you need to stop LicenseServer, replace **load** with **unload** in the command above.

Start DiffDog Server

DiffDog Server server daemon starts automatically after installation and a re-boot of the machine. You can start DiffDog Server as a daemon with the following command:

```
sudo launchctl load /Library/LaunchDaemons/com.altova.DiffDogServer.plist
```

If at any time you need to stop DiffDog Server, use the following command:

```
sudo launchctl unload /Library/LaunchDaemons/com.altova.DiffDogServer.plist
```

2.3.4 Register DiffDog Server (macOS)

To be able to license DiffDog Server from Altova LicenseServer, DiffDog Server must be registered with LicenseServer.

To register DiffDog Server from the command line interface, use the `licenseserver` command:

```
sudo /usr/local/Altova/DiffDogServer2025/bin/DiffDogServer licenseserver [options]
ServerName-Or-IP-Address
```

For example, if `localhost` is the name of the server on which LicenseServer is installed:

```
sudo /usr/local/Altova/DiffDogServer2025/bin/DiffDogServer licenseserver localhost
```

In the command above, `localhost` is the name of the server on which LicenseServer is installed. Notice also that the location of the DiffDog Server executable is:

```
/usr/local/Altova/DiffDogServer2025/bin/
```

After successful registration, go to the Client Management tab of LicenseServer's configuration page to assign a license to DiffDog Server.

For more information about registering Altova products with LicenseServer, see the LicenseServer user manual.

2.3.5 Assign License (macOS)

After successfully registering DiffDog Server, it will be listed in the Client Management tab of the configuration page of LicenseServer. Go there and assign a license to DiffDog Server.

The licensing of Altova server products is based on the number of processor cores available on the product machine. For example, a dual-core processor has two cores, a quad-core processor four cores, a hexa-core processor six cores, and so on. The number of cores licensed for a product must be greater than or equal to the number of cores available on that server machine, whether the server is a physical or virtual machine. For example, if a server has eight cores (an octa-core processor), you must purchase at least one 8-core license. You can also combine licenses to achieve the core count. So, two 4-core licenses can also be used for an octa-core server instead of one 8-core license.

If you are using a computer server with a large number of CPU cores but only have a low volume to process, you may also create a virtual machine that is allocated a smaller number of cores and purchase a license for that number. Such a deployment, of course, would have less processing speed than if all available cores on the server were utilized.

Note: Each Altova server product license can be used for only one client machine at a time, even if the license has unused licensing capacity. (A client machine is the machine on which the Altova server product is installed.) For example, if a 10-core license is used for a client machine that has 6 CPU cores, then the remaining 4 cores of licensing capacity cannot be used simultaneously for another client machine.

Single-thread execution
If an Altova server product allows single-thread execution, an option for *Single-thread execution* will be available. In these cases, if an Altova server-product license for only one core is available in the license pool, a machine with multiple cores can be assigned this one-core license. In such a case, the machine will run that product on a single core. Processing will therefore be slower, because multi-threading (which is possible on multiple cores) will not be available. The product will be executed in single thread mode on that machine.

To assign a single-core license to a multiple-core machine in LicenseServer, select the *Limit to single thread execution* check box for that product.

Estimate of core requirements
There are various external factors that influence the data volumes and processing times your server can handle (for example: the hardware, the current load on the CPU, and memory allocation of other applications running on the server). In order to measure performance as accurately as possible, test the applications in your environment with data volumes and in conditions that approximate as closely as possible to real business

situations.

2.4 Upgrade DiffDog Server

The simplest way to carry over a license from the previous version of DiffDog Server to a newer version is via the installation process. The key steps during installation are:

1. Register the new version of DiffDog Server with the LicenseServer that holds the license of the older version of DiffDog Server.
2. Accept the license agreement of DiffDog Server. (If you do not accept the agreement, the new version will not be installed.)

Note: If you do not register DiffDog Server with LicenseServer during the installation process, you can do this later and then complete the licensing process.

2.5 Migrate DiffDog Server to a New Machine

If you want to migrate DiffDog Server from one machine to another (including across supported platforms), follow the guidelines below.

Migrating DiffDog Server to a new machine consists of re-assigning the license from the old machine to the new machine. Do this as follows:

1. Install DiffDog Server on the new machine. If it has already been installed as part of FlowForce Server installation, ignore this step.
2. On the new machine, register DiffDog Server with Altova LicenseServer.
3. On the old machine, make sure no clients are using the server.
4. Open the Altova LicenseServer administration page. Deactivate the license from the old DiffDog Server machine and re-assign it to the new machine.

Note: Migrate the server configuration file in order to keep your previous configuration settings.

3 Configure Server and Clients

DiffDog Server and its clients, respectively, have separate configuration settings. You can configure these settings in the following configuration files:

- *Server configuration file*[39]*:* **`server_config.ini`**, located in the application data folder[35] of DiffDog Server. We describe two typical scenarios in which server configuration is required: Remote Client Setup[36] and Aliases for Server Folders[38].
- *Client configuration file*[41]*:* **`client_config.ini`**, located in a folder on the client machine. Client configuration would facilitate client access to the server, and the steps to do this are also described in the topic Remote Client Setup[36].

You can change the settings in the configuration files by editing the files in a text editor. All the settings available in these files are listed and described in the sections Server Configuration File[39] and Client Configuration File[41]. After editing the server configuration file, restart DiffDog Server as a service (see Setup on Windows[13], Setup on Linux[22] and Setup on macOS[27]).

Important points
Note the following points:

- To call the executable (client or server) just by name, without the full path, add the program installation directory to your system's PATH variable.
- The client executable (**`diffdogcmdlclient.exe`**) can run on the same machine as DiffDog Server or on a different machine. Having the client and DiffDog Server on different machine enables you to compare a client-side file/directory with a remote server-side file/directory.
- The client and the server can be on different operating systems. The advantage of such a setup is that it enables you to run comparisons from virtually any client configured to communicate with the server.

3.1 Important Paths

Installation folder
The default installation folder of DiffDog Server on the various operating systems are as follows. It contains, among other files, the server executable file (in the `bin` subfolder) and client executable file (in the `cmdlclient` subfolder) for command line access to DiffDog Server functionality.

Linux	`/opt/Altova/DiffDogServer2025`
Mac	`/usr/local/Altova/DiffDogServer2025`
Windows	`<ProgramFilesFolder>\Altova\DiffDogServer2025`

Appdata folder
The application data folder of DiffDog Server on the various operating systems are as follows.

Linux	`/var/opt/Altova/DiffDogServer2025`
Mac	`/var/Altova/DiffDogServer2025`
Windows	`C:\ProgramData\Altova\DiffDogServer2025`

3.2 Remote Client Setup

You can set up client machines to access a DiffDog Server that is located on another machine. To do this you will need to (i) copy the **cmdlclient** subfolder from the DiffDog Server installation folder[35] and (ii) set the client configuration file[41] to access DiffDog Server on the remote machine. In this way you can set up multiple clients to access a DiffDog Server.

This topic describes client setup and how to fix common problems.

Client setup steps

1. Make sure that DiffDog Server is installed, licensed and running as a service (see Setup on Windows[13], Setup on Linux[22] and Setup on macOS[27]).
2. In the server configuration file[39] make sure that the address and port for client requests are correct according to your requirements. The respective defaults are **127.0.0.1** and **29800**. To enable incoming connections from other machines, set the *address* parameter to **0.0.0.0**. Also ensure that the server's address and port are not blocked by a firewall.
3. Restart DiffDog Server as a service (*see Step 1 above*).
4. If the client machine runs on the same operating system and platform as the server machine, copy the **cmdlclient** subfolder from the DiffDog Server installation folder[35] to a suitable location on the client machine. If the client machine runs on a different machine than the server: (i) download DiffDog Server for the client's OS and install it on the client machine, (ii) copy the **cmdlclient** subfolder from the installation folder[35] of the client to another folder on the client, (iii) uninstall DiffDog Server from the client (which leaves you with only the **cmdlclient** subfolder on the client).
5. On the client machine, edit the client configuration file[41] so that it points to the address and port where DiffDog Server listens for HTTP client requests.

On the client machine, you can now use the client executable **diffdogcmdlclient** to run DiffDog Server commands. On running a command, the client connects to DiffDog Server to call the server command. Here is an example command that compares a file on the client with a file on the server.

```
diffdogcmdlclient diff --client-left=path\to\client\file.txt --server-
right=path\to\server\file.txt --mode=text
```

Troubleshooting

The following table lists common problems that you might encounter and their solutions.

Incompatible Windows version
Problem: On running **DiffDogCmdlClient.exe** on Windows, an error message is displayed at the command line: *This version is not compatible with the version of Windows you're running. Check your computer's system information and then contact the software publisher.*

Solution: This could occur if you run a 64-bit executable on a 32-bit operating system (or vice versa). Install the appropriate DiffDog Server version for your Windows version.

Wrong file selection for the "diff" command
Problem: On running the `diff`[88] command, an error message is displayed at the command line: *Unknown error processing the command line*.

Solution: Ensure that paths on the server are supplied with the `--server-left` or `--server-right` options and that paths on the client are supplied with the `--client-left` or `--client-right` options.

Files access on the server is restricted
Problem: On running the `diff` command, an error message is displayed at the command line: *Server is restricting file access to aliases, but client didn't specify an alias name.*

Solution: Specify the command's `--alias` option.

Read/write error
Problem: On running the `diff` command, an error message is displayed at the command line: *[ERROR] FatalError: I/O operation on file 'file:///home/etc//Address.xsd' failed. Details: System Error 13: Permission denied [ERROR] [PH] Failed to prepare path for comparison. Check log for more info*.

Solution: Make sure that you have read-write access to the necessary paths on the remote server.

3.3 Aliases for Server Folders

Administrators can, for reasons such as security, configure DiffDog Server to restrict client access to folders on the server. When server access is restricted in this way, clients can access the restricted folders via aliases. An alias is a name that maps to a designated folder on the server machine to which client access is allowed. Any folder outside the aliased folder cannot be accessed by clients.

Note that alias names are case-sensitive.

The mechanism for using aliases is as given below.

On the server
On the server machine, administrators may restrict access by modifying the server configuration file[39] with lines like in the listing below. The steps are: (i) Use the `restrict-to-aliases` instruction to restrict client access to server folders; (ii) assign aliases to server folders that you want to make accessible to clients.

```
restrict-to-aliases = true

[alias:sandbox1]
path = C:\Public\Comparisons

[alias:sandbox2]
path = D:\Comparisons
```

After making these changes, save the server config file and restart DiffDog Server as a service (see Setup on Windows[13], Setup on Linux[22] and Setup on macOS[27]). From this point onwards, clients can run comparisons that reference the aliased folders. In the example above, clients can use the alias **sandbox1** or **sandbox2** to access their respective associated folder on the server.

On the client
If client access to server folders is restricted to aliased folders, then commands run from a remote client must always specify the command's `--alias` option. So, for example, if the file **C:\Public\Comparisons\file.txt** exists on a restricted-access server and the folder **C:\Public\Comparisons** has been assigned an alias of **sandbox1**, then a **diff** command can be run on the client by using the **--alias** option, as follows:

```
diffdogcmdlclient diff --client-left=path\to\client\file.txt --server-right=file.txt --
mode=text --alias=sandbox1
```

To see a server's aliases from a remote client, run the `aliases`[81] command on the client:

```
diffdogcmdlclient aliases
```

3.4 Server Configuration File

The server configuration file is called **server_config.ini** and is located in the application data folder[35]. You can reconfigure the server by modifying the settings in this file. To create a DiffDog Server configuration file with the default configuration settings, run the createconfig[108] command.

Server configuration settings

The settings of the server configuration file are given below.

address	Defines the address (HTTP interface) on which DiffDog Server should listen for HTTP requests. This should be an IP address from one of the network interfaces configured at the machine or the name **localhost**. To have DiffDog Server listen on all interfaces, set this value to **0.0.0.0**. If it should listen for local requests only, set this value to **127.0.0.1** (which is the default setting).
hide-alias-paths	An alias is a directory path on the server that clients are allowed to access when performing remote comparisons. This option controls the level of detail that clients can see when they run the aliases[81] command. It is meaningful if the restrict-to-aliases option is set to true. *False* Allow clients to view the list of aliases defined on the server along with the paths to which each alias points. *True* Allow clients to view just the list of aliases defined on the server; do not show any paths. See also: Aliases for Server Folders[38]
jvm-location	This option lets you specify the path to a Java VM (Virtual Machine) required for Java-specific tasks such as connecting to a database through JDBC. Note that adding a custom Java VM path is typically not necessary. By default, the application attempts to detect the Java VM path automatically based on the JAVA_HOME environment variable. On Windows, the Java VM path is determined by reading (in this order) the Windows registry and the JAVA_HOME environment variable. The custom path added in the jvm-location option will take priority over any other Java VM path detected automatically. If set, the path must point to the **jvm.dll** (Windows), **jvm.so** (Linux), or **libjvm.dylib** (macOS) file found in the JDK installation directory.
language	Specifies the language of the command line interface. Valid values are en, de, es, fr, ja (English, German, Spanish, French, and Japanese).
port	Defines the port on which DiffDog Server should listen for HTTP requests. The default setting is **29800**.
restrict-to-aliases	Restricts access to server paths for remote clients connecting to DiffDog server. Valid values are:

	True Access to server paths is restricted. If you set this value, then at least one `[alias:<identifier>]` must be defined in the configuration file as well, see below. Any server paths outside of the alias directory are not accessible to remote clients and cannot be included in comparisons. *False* Access to server paths is not restricted.
`server.log-file`	Defines the name and location of the server's log file. This file contains general activity events logged by the server, including licensing events.
`server.output-root-dir`	Specifies the directory where the output of all submitted jobs is saved.
`server.unrestricted-filesystem-access`	When set to *True* (the default value), output files are written directly to the location specified by the user (possibly overwriting existing files of the same name). Setting the value to *True* is meaningful if the client and server are on the same machine and you want to write the output files to any directory on that machine. When set to *False*, output files are written to the output directory (see the `server.output-root-dir` option).

[alias:<name>]
An alias is a directory path on the server that clients are allowed to access when performing remote comparisons. When `restrict-to-aliases=true`, clients must always specify the `--alias` 88 option when running a comparison that includes server paths. For an example, see Aliases for Server Folders 38.

You can create multiple aliases, for example *[alias:name1]*, *[alias:name2]*, and so on. The name of each alias must be unique. An alias can have only one option: `path`., which is the path to the to the folder on the server that DiffDog Server clients are allowed to access. For example, the following configuration creates an alias called **sandbox** for the directory `C:\Public`.

```
[alias:sandbox]
path = C:\Public
restrict-to-aliases = true
```

[datasource:<name>]
A `[datasource]` section defines (i) the connection details to a database and (ii) specifies various other parameters applicable when performing database comparisons. You can create multiple data sources if necessary. *Also see Setting up Data Sources* 55 *and CLI: data-diff, compare-data* 85*.*

3.5 Client Configuration File

A client configuration file defines various configuration settings that affect comparisons and connectivity between a DiffDog Server client and a remote DiffDog Server. You must typically edit the client configuration file in order to do the following:

- Set up communication between the client and a remote DiffDog Server. In this case, the `address` and `port` parameters in the client config file must point to the server machine.
- Change the language of the client CLI.
- Set default values for various options when you run a comparison. These can be overridden on the command line when you run a data-differencing command[78].
- Define XML filters, which are useful when comparing XML files. For example, a filter would let you ignore attributes or elements with a specific name during comparison.
- Define directory filters, which allow you to include or ignore files or directories that follow a specific pattern.
- Define connections to data sources such as databases or CSV files.
- Other configuration options, as described below.

Which client configuration?

If the client is on the same machine as DiffDog Server, then the default client configuration is accessed without you needing to do anything. You can see the settings of the default client configuration file by running the command `showcfg`[80]. If you need to change any configuration setting or if you want to set up a client on a machine that is remote from the server, then you must create a client configuration file and save it to a suitable location on the client machine. Do this as follows:

1. Go to the installation folder[35] and then to the **`cmdlclient`** subfolder.
2. Copy the template config file **`client_config.ini.sample`**.
3. Save it to a suitable location on the client machine, giving it the name **`client_config.ini`**. This will be the client's configuration file.

When you run a command with the client executable **`DiffDogCmdlClient.exe`**, then the executable looks for the client config file **`client_config.ini`** in the same folder as the executable. If the client config file is not found there, then the executable looks for it in the folder specified with the current command's **`--c`** option. If no config file is found at this location either, then the default client configuration is used.

You can view the current configuration at any time by running the `showcfg`[80] command.

Client configuration settings

The settings of the client configuration file are organized into the following groups.

[general]

`jvm-location`	This option lets you specify the path to a Java VM (Virtual Machine) required for Java-specific tasks such as connecting to a database through JDBC. Note that adding a custom Java VM path is typically not necessary. By default, the application attempts to detect the Java VM path automatically based on the `JAVA_HOME` environment variable. On Windows, the Java VM path is determined by reading (in this order) the Windows registry and the `JAVA_HOME` environment variable. The custom path added in the `jvm-location` option will take priority over any other Java VM path detected automatically. If set, the path must point to the **`jvm.dll`** (Windows), **`jvm.so`** (Linux), or **`libjvm.dylib`** (macOS) file found in the JDK installation directory.
`language`	Specifies the language of the command line interface (for the client). Valid values are en, de, es, fr, ja (English, German, Spanish, French, and Japanese).
`server.address`	Specifies the address of the remote host where DiffDog Server is listening for HTTP requests.
`server-alias`	If the server administrator has restricted access to server paths for security reasons, comparisons cannot use server file paths directly but must use an alias that the server administrator has assigned. This is done by specifying the alias in the `--alias` option (of the `diff, compare` 88 and `run, import, load` 100 commands). *See Aliases for Server Folders* 38 *for more information about this feature.* Alternatively, you can set the `server-alias` option in the client configuration file, so that you don't have to enter it at the command line. For example, the following configuration defines a default alias called *sandbox*: `server-alias=sandbox` **Note:** If you set the `--alias` option at the command line, it takes precedence over the value in the configuration file.
`server.port`	Specifies the remote port where DiffDog Server is listening for HTTP requests.
`zip-as-dir`	When you run the `diff` command without setting the `--zip-as-dir` 88 option, the executable will look for it in this configuration file. Set here the default preferred value for this option.
`whitespace-mode`	When you run the `diff` command without setting the `--whitespace-mode` 88 option, the executable will look for it in this configuration file. Set here the default preferred value for this option.

[file-types]

When you run the `diff` 88 command without specifying a comparison mode through the `--mode` option (text, binary, or XML), the application decides the comparison mode automatically for each file based on extension (that is, `--mode=auto`). In the options below, you can define what file extensions should be treated as text, binary, or XML, whenever the comparison mode is not explicitly set.

`text`	A comma-separated list of file extensions that are treated as text by default.
`xml`	A comma-separated list of file extensions that are treated as XML by default.

`binary`	A comma-separated a list of file extensions that are treated as binary by default.

[xml]

`ignore-namespace`	When you run the `diff` command without setting the `--xml-ignore-namespace` option, the executable will look for it in this configuration file. Set here the default preferred value for this option.
`ignore-prefixes`	When you run the `diff` command without setting the `--xml-ignore-prefixes` option, the executable will look for it in this configuration file. Set here the default preferred value for this option.
`resolve-entities`	When you run the `diff` command without setting the `--xml-resolve-entities` option, the executable will look for it in this configuration file. Set here the default preferred value for this option.
`ignore-text`	When you run the `diff` command without setting the `--xml-ignore-text` option, the executable will look for it in this configuration file. Set here the default preferred value for this option.
`ignore-case-in-names`	When you run the `diff` command without setting the `--xml-ignore-case-in-names` option, the executable will look for it in this configuration file. Set here the default preferred value for this option.
`ignore-case-in-text`	When you run the `diff` command without setting the `--xml-ignore-case-in-text` option, the executable will look for it in this configuration file. Set here the default preferred value for this option.
`ignore-markup-attributes`	When you run the `diff` command without setting the `--xml-ignore-markup-attributes` option, the executable will look for it in this configuration file. Set here the default preferred value for this option.
`ignore-markup-cdata`	When you run the `diff` command without setting the `--xml-ignore-markup-cdata` option, the executable will look for it in this configuration file. Set here the default preferred value for this option.
`ignore-markup-comments`	When you run the `diff` command without setting the `--xml-ignore-markup-comments` option, the executable will look for it in this configuration file. Set here the default preferred value for this option.
`ignore-markup-processing-instructions`	When you run the `diff` command without setting the `--xml-ignore-markup-processing-instructions` option, the executable will look for it in this configuration file. Set here the default preferred value for this option.
`ignore-markup-doctype-decls`	When you run the `diff` command without setting the `--xml-ignore-markup-doctype` option, the executable will look for it in this configuration file. Set here the default preferred value for this option.
`ignore-markup-xml-decls`	When you run the `diff` command without setting the `--xml-ignore-markup-xml` option, the executable will look for it in this configuration file. Set here the default preferred value for this option.

`order-by-elements`	When you run the `diff` command without setting the `--xml-order-by-elements` option, the executable will look for it in this configuration file. Set here the default preferred value for this option.
`order-by-attributes`	When you run the `diff` command without setting the `--xml-order-by-attributes` option, the executable will look for it in this configuration file. Set here the default preferred value for this option.
`order-by-text`	When you run the `diff` command without setting the `--xml-order-by-text` option, the executable will look for it in this configuration file. Set here the default preferred value for this option.
`order-by-list`	When you run the `diff` command without setting the `--xml-order-by-attribute-list` option, the executable will look for it in this configuration file. Set here the default preferred value for this option. This must be a named list of attributes defined in the `[xml.orderby<name-of-my-list>]` group (see below).

[xml.orderby:<identifier>]
This option group represents a named list of XML attributes. When an XML comparison takes place, such a list will cause the XML elements to be ordered by specific attributes before comparison. For an example, see the `--xml-order-by-attribute-list` option. You can create multiple attribute lists, for example *[xml.orderby:list1]*, *[xml.orderby:list2]*, and so on. The name of each attribute list must be unique.

`attributes`	Enter here the attribute by which XML elements must be ordered before comparison, for example: `attributes = myattribute` You can also specify a comma-separated list of XML attributes, for example: `attributes = attr1, attr2, attr3`

[xml.filter:<identifier>]
This option group represents a filter that lets you ignore attributes or elements with a specific name during comparison. You can create multiple such option groups, for example *[xml.filter:filter1]*, *[xml.filter:filter2]*, and so on. The name of each option group must be unique.

`ignore-elements`	Enter here a comma-separated list of XML elements that should be ignored when this filter is active.
`ignore-attributes`	Enter here a comma-separated list of XML attributes that should be ignored when this filter is active.
`ignore-both`	Enter here a comma-separated list of XML elements or attributes that should be ignored when this filter is active.

Once you define a filter in the configuration file, you can supply it at the command line using the `--xml-filter` option.

[text]

`ignore-case`	When you run the `diff` command without setting the `--ignore-case` option, the executable will look for it in this configuration file. Set here the default preferred value for this option.
`ignore-blank-lines`	When you run the `diff` command without setting the `--ignore-blank-lines` option, the executable will look for it in this configuration file. Set here the default preferred value for this option.

[dir]

`ignore-case`	When you run the `diff` command without setting the `--dir-ignore-case` option, the executable will look for it in this configuration file. Set here the default preferred value for this option.
`compare-file-content`	When you run the `diff` command without setting the `--dir-compare-contents` option, the executable will look for it in this configuration file. Set here the default preferred value for this option.
`compare-sizes`	When you run the `diff` command without setting the `--dir-compare-sizes` option, the executable will look for it in this configuration file. Set here the default preferred value for this option.
`compare-modification-times`	When you run the `diff` command without setting the `--dir-compare-mod-times` option, the executable will look for it in this configuration file. Set here the default preferred value for this option.
`ignore-modtime-interval`	When you run the `diff` command without setting the `--dir-compare-mod-times-ignore-seconds` option, the executable will look for it in this configuration file. Set here the default preferred value for this option.

[dir.filter:<identifier>]

This option group represents a filter that lets you include or ignore files or directories that follow a specific pattern. At the command line, you can specify directory filters using the **`--directory-filter`** option. In the configuration file, you can create multiple such option groups, for example *[dir.filter:filter1]*, *[dir.filter:filter2]*, and so on. The name of each option group must be unique. Each option group can contain one or more of the following options:

`ignore-files`	A list of file extensions that should be excluded from the comparison (ignored) when this filter is active.
`ignore-dirs`	A list of directory names that should be excluded from the comparison (ignored) when this filter is active.
`include-dirs`	A list of directory names that should be included in the comparison when this filter is active.
`include-files`	A list of file extensions that should be included in the comparison when this filter is active.

`include-archive-files`	Windows-specific. Set this value to *true* if archive files should be included in the filter; *false* otherwise.
`include-hidden-dirs`	Windows-specific. Set this value to *true* if hidden directories should be included in the filter; *false* otherwise.
`include-hidden-files`	Windows-specific. Set this value to *true* if hidden files should be included in the filter; *false* otherwise.
`include-readonly-files`	Windows-specific. Set this value to *true* if read-only files should be included in the filter; *false* otherwise.
`include-system-dirs`	Windows-specific. Set this value to *true* if system directories should be included in the filter; *false* otherwise.
`include-system-files`	Windows-specific. Set this value to *true* if system files should be included in the filter; *false* otherwise.

Note that the application contains a few built-in directory filters (and you don't need to create them since they will be recognized even if you didn't define them in the configuration file). You can however alter the definition of these filters in the configuration file, in which case your filter will override the built-in configuration. The built-in filters are as follows:

`xml`	When this filter is active and a directory comparison is performed, files with the following extensions are included in the comparison: `*.biz, *.cml, *.dcd, *.dtd, *.ent, *.fo, *.math, *.mml, *.mtx, *.rdf, *.smil, *.svg, *.tld, *.tsd, *.vml, *.vxml, *.wml, *.wsdl, *.xbrl, *.xdr, *.xhtml, *.xml, *.xsd, *.xsl, *.xslt`. On Windows, read-only and archive files are included in the comparison.
`text`	When this filter is active and a directory comparison is performed, only files with the following extensions are included in the comparison: `*.asp, *.c, *.cc, *.cpp, *.cs, *.css, *.cxx, *.h, *.hpp, *.htm, *.html, *.java, *.jsp, *.rc, *.tlh, *.tli, *.txt`. On Windows, read-only and archive files are included in the comparison.
`nobinary`	When this filter is active and a directory comparison is performed, files with the following file extensions are ignored: `a.out, *.a, *.avi, *.bmp, *.chm, *.com, *.dll, *.doc, *.docm, *.docx, *.dot, *.dotm, *.dotx, *.exe, *.gif, *.gz, *.hlp, *.ico, *.ilk, *.jar, *.jpeg, *.jpg, *.lib, *.mdb, *.mid, *.mp2, *.mp3, *.mp4, *.mpeg, *.msi, *.o, *.obj, *.ogg, *.pdb, *.pdf, *.png, *.pps, *.ppt, *.pptx, *.rar, *.snd, *.so, *.tar, *.tif, *.tiff, *.tlb, *.ttf, *.wav, *.wma, *.wmf, *.wmv, *.xls, *.xlsx, *.zip`
`cvs`	When this filter is active and a directory comparison is performed, files with the following file extensions are ignored: `.#*, .cvsignore, .cvsrc, .cvswrappers, .cvspass, .rhosts`. Also, any directory with the name `CVS` is ignored. On Windows, read-only and archive files are also included in the comparison.

`svn`	When this filter is active and a directory comparison is performed, any directory with the name `.svn` is ignored. On Windows, read-only and archive files are included in the comparison.
`git`	When this filter is active and a directory comparison is performed, any directory with the name `.git` is ignored. Also, any file with the name `.gitignore` is ignored. On Windows, read-only and archive files are included in the comparison.

[datasource:<name>]
A `[datasource]` section defines the connection details to a database, and specifies various other parameters applicable when performing database comparisons. You can create multiple data sources if necessary. For more information, see Setting up Data Sources 55.

[datadiff:<name>]
A `[datadiff]` section defines the parameters of a database data comparison job that will be run with the `data-diff` 85 command. You can create multiple `[datadiff]` sections if necessary. For more information, see Setting up CSV and Database Comparisons 62.

4 Comparisons

This section provides an overview of how to run comparisons on the following object types:

- Directories 49
- Word Documents 51
- DB Data and CSV Data 52

Compare files directly

To compare files directly in DiffDog Server, you would typically use the **diff** 88 command. The description of the diff command 88 explains file differencing in detail.

Comparison jobs in config files

You can also define a DB/CSV-file comparison job in a config file and run the comparison using the **data-diff** 88 command. How to run such comparison jobs is described in the section DB Data and CSV Data 52.

Comparison jobs in comparison files (.*dif files)

Comparison settings created in Altova DiffDog Enterprise can be exported to a **.dirdif**, **.filedif**, or **.dbdif** file. The comparison objects defined in these files can then be compared using DiffDog Server by submitting them as an argument of the **run, import, load** 100 command. While the description of the command discuses the command generally, the topic Compare CSV Data 65 in this section discusses details related specifically to **.dbdif** comparisons.

4.1 Directories

To compare two local directories side-by-side, call the diff command and supply the directory paths as arguments. For example:

```
diffdogserver diff "C:\Reports" "C:\ReportsNew"
diffdogcmdlclient diff "C:\Reports" "C:\ReportsNew"
```

The example above runs a quick comparison, which checks directories only for the size and modification times of their files and sub-directories; the contents of files are not compared. If you want to also check the contents of all files and sub-directories within the compared directories, set the **--dir-compare-contents** option to **true**. and the --mode option to the comparison mode you want (binary, text, or XML).

```
diffdogcmdlclient diff "C:\Reports" "C:\ReportsNew" --dir-compare-contents=true --
mode=auto
```

Directory comparison options

Like with other comparisons, the compared directories can be either on the server or the client machine. Specify this with the --server-left, --server-right or --client-left, --client-right options. For example, in the comparison below, the first directory is on the server and the second one is on the client machine.

```
diffdogcmdlclient diff --server-left="/home/altova/reports" --client-right="C:
\ReportsNew"
```

Other directory comparison options are the following:

- --directory-filter, --df lets you include or exclude certain files or sub-directories from the comparison based on criteria you define.
- --dir-compare-mod-times, --dt adds as comparison criterion the time when the compared directories or files were last modified.
- --dir-compare-mod-times-ignore-seconds, --di when comparing modification times (see previous option), this option ignores file or directory modifications made within the specified number of seconds.
- --dir-compare-sizes, --ds adds the directory size as comparison criterion.
- --dir-ignore-case, --dic ignores case in file and directory names
- --output-file, --o lets you set the name of the report file (text or XML) where the comparison results will be saved.
- --output-mode, --om lets you choose a format for the comparison report (XML or text). Note that a report in text format is not supported if the compared directories contain XML files and the comparison is an XML comparison.

Applying file comparison options

If a directory comparison is defined to check file contents (by setting --dir-compare-contents=true), then you can use all the available file comparison options (such as those that begin with --doc, --text, or, --xml). see the diff command reference). For example, if directories containing text files are compared, you can ignore blank lines or case inside the text files with a command like:

```
diffdogcmdlclient  diff "C:\Reports" "C:\ReportsNew" --dir-compare-contents=true --
mode=auto --text-ignore-case=true
```

Comparison results

The comparison result is reported by the exit code[68]. If differences exist, a detailed text or XML report can be generated additionally. For more information, see Comparison Results[68].

4.2 Word Documents

You can compare Microsoft Word 2003 (or later) documents (**.docx**, **.dotx**). Microsoft Word is not required to be installed in order to perform such comparisons.

To compare Word documents, invoke the `diff` command similarly to how this is done for text or XML files:

```
diffdogserver diff "C:\Reports.docx" "C:\ReportsWithFeedback.docx" --mode=doc
diffdogcmdlclient diff "C:\Reports.docx" "C:\ReportsWithFeedback.docx" --mode=doc
```

It is best to set the `--mode=doc` option in order to instruct DiffDog Server to treat the compared files as Word documents.

Note: Besides **.docx** files created in MS Office, **.docx** files generated in Text Control are also fully compatible with DiffDog Server.

Word document comparison options

When comparing Word documents, you can choose whether formatting information such as bold, italic, font size and color should be ignored or taken into account. The `diff` command provides the following options specially for Word documents:

- --doc-format-bold, --dfb
- --doc-format-font-color, --dfc
- --doc-format-font-name, --dff
- --doc-format-font-size, --dfs
- --doc-format-italic, --dfi
- --doc-format-underline, --dfu

In addition, you can set the following options when comparing Word documents:

- --doc-ignore-blank-lines, --dib
- --doc-ignore-case, --doc
- --doc-whitespace-mode, --dws

Comparison results

For Word documents, the comparison result is reported by the exit code. If differences exist, a detailed XML report can be generated additionally. For more information, see Comparison Results.

4.3 DB Data and CSV Data

With DiffDog Server, you can compare (i) data from different databases (DBs) with each other, (ii) data from different CSV files with each other, as well as (iii) data from DBs against data from CSV files. The data from DBs can be data from DB tables or views, or from custom recordsets retrieved with the help of SQL queries.

There are two ways to run DB/CSV data comparisons in DiffDog Server:

- via a comparison job in the client or server configuration file
- via a comparison file (**.dbdif** file) created in Altova DiffDog Enterprise Edition

Both methods are described below.

Comparison job in configuration file

A comparison job in a configuration file is defined in a **[datadiff:<name>]** 62 section of the client or server configuration file. The comparison job is executed by calling the **data-diff** 85 command and submitting the name of the comparison job as the command's argument (*see Step 3 in the procedure below*).

In order to define a comparison job, carry out the steps described below.

1. In the configuration file (client or server, as appropriate), define the data sources 55 you want to compare, each as a separate **[datasource]** section of the config file.
2. In the configuration file, define the data comparison job 62 in a **[datadiff]** section.
3. Run the **data-diff** 85 command with the name of the comparison job as the command's argument, like this:

```
diffdogcmdlclient data-diff --c=client_config.ini reports
```

The topics of this section describe how to create the **[datasource]** 83 and **[datadiff]** 85 sections required to define a comparison job in a configuration file. This section also contains a Datasource Examples 60 topic and a topic that includes a description of CSV comparisons via the configuration file 65.

Comparison file created in DiffDog (.dbdif file)

On Windows, create the comparison job in DiffDog Enterprise and save it as a `.dbdif` files, then run the job on the server using the **run** 100 command:

```
diffdogserver run <.dbdif-file>
diffdogcmdlclient run <.dbdif-file>
```

Note the following points:

- For more information about creating database data comparison files, refer to the DiffDog user manual.
- If you run the **.dbdif** file with DiffDog Server on a different machine or operating system, then the database drivers required by the connection must also be installed on the machine running the command.
- Note that some database connections methods supported on Windows are not supported on Linux and macOS. *See also Supported Databases* 53.
- For additional notes about comparisons involving CSV files, see Compare CSV Data 65.

4.3.1 Supported Databases

Supported connection types

The following table lists the database connection types supported for each platform.

Connection Type	Linux	macOS	Windows
ADO	–	–	Yes
ADO.NET	–	–	Yes, with limitations, see ADO.NET Support Notes 55
JDBC	Yes	Yes	Yes
ODBC	–	–	Yes
PostgreSQL	Yes	Yes	Yes
SQLite	Yes	Yes	Yes

Supported database drivers

For a database connection to be possible, the required database drivers must be installed on the operating system.

- For ADO.NET connections, .NET Framework must be installed. Also, the ADO.NET provider of the database vendor must be installed if not already available on your operating system. Note that the ADO.NET providers of certain databases are not supported (*see ADO.NET Support Notes 55 below*).
- For JDBC connections, the JDBC drivers must be added to the CLASSPATH variable. Also, the JRE (Java Runtime Environment) or Java Development Kit (JDK) must be installed. This may be either Oracle JDK or an open source build such as Oracle OpenJDK. As an alternative to changing the CLASSPATH variable, you can add values to the Java class path by configuring the data source with the extend-classpath 57 option.
- For ODBC connections, the ODBC driver of the respective database vendor must be installed.
- PostgreSQL and SQLite connections are supported natively and do not require any drivers.

Note: The 32-bit or 64-bit platform of DiffDog Server should match that of the database driver.

Run the CLI command db-drivers 84 to view all the database drivers detected on your machine by DiffDog Server.

Supported databases

The table below lists all the supported databases. If your Altova application is a 64-bit version, ensure that you have access to the 64-bit database drivers needed for the specific database you are connecting to.

Database	Notes
Firebird 2.x, 3.x, 4.x	
IBM DB2 8.x, 9.x, 10.x, 11.x, 12.x	
IBM Db2 for i 6.x, 7.4, 7.5	Logical files are supported and shown as views.
IBM Informix 11.70 and later	
MariaDB 10 and later	MariaDB supports native connections. No separate drivers are required.
Microsoft Access 2003 and later	You can connect to an Access 2019 database from Altova products (i) only if the corresponding version of Microsoft Access Runtime is installed and (ii) only if the database does not use the "Large Number" data type.
Microsoft Azure SQL Database	SQL Server 2016 codebase
Microsoft SQL Server 2005 and later Microsoft SQL Server on Linux	
MySQL 5 and later	MySQL 5.7 and later supports native connections. No separate drivers are required.
Oracle 9i and later	
PostgreSQL 8 and later	PostgreSQL connections are supported both as native connections and driver-based connections through interfaces (drivers) such as ODBC or JDBC. Native connections do not require any drivers.
Progress OpenEdge 11.6	
SQLite 3.x	SQLite connections are supported as native, direct connections to the SQLite database file. No separate drivers are required.
Sybase ASE 15, 16	

Database	Notes
Teradata 16	

ADO.NET Support Notes

The following table lists known ADO.NET database drivers that are currently not supported or have limited support in DiffDog Server.

Database	Driver	Support notes
All databases	**.Net Framework Data Provider for ODBC**	Limited support. Known issues exist with Microsoft Access connections. It is recommended to use ODBC direct connections instead.
	.Net Framework Data Provider for OleDb	Limited support. Known issues exist with Microsoft Access connections. It is recommended to use ADO direct connections instead.
Firebird	**Firebird ADO.NET Data Provider**	Limited support. It is recommended to use ODBC or JDBC instead.
Informix	**IBM Informix Data Provider for .NET Framework 4.0**	Not supported. Use **DB2 Data Server Provider** instead.
IBM DB2 for i (iSeries)	**.Net Framework Data Provider for i5/OS**	Not supported. Use **.Net Framework Data Provider for IBM i** instead, installed as part of the *IBM i Access Client Solutions - Windows Application Package*.
Oracle	**.Net Framework Data Provider for Oracle**	Limited support. Although this driver is provided with the .NET Framework, its usage is discouraged by Microsoft, because it is deprecated.
PostgreSQL	—	No ADO.NET drivers for this vendor are supported. Use a native connection instead.
Sybase	—	No ADO.NET drivers for this vendor are supported.

4.3.2 [datasource]: Set up Data Sources

In order to compare tabular data 62 originating from a database or from a CSV file, the data sources to be compared must be defined so that they include the database connection details and other relevant parameters. One data source must exist for each database table, view, or custom SQL query that you want to include in the comparison. If CSV files are involved in the comparison, then a data source must exist for each CSV file as well.

Configuring data sources
A data source is defined in the **[datasource:<name>]** section of a configuration file. Open the client configuration file[41] and add a new **[datasource:<name>]** section, where <name> is the unique name by which you want to identify this data source.

Data sources can also be added to the server configuration file[39]. This is useful if you need to connect to the data source from the machine where DiffDog Server (not the DiffDog Command Line Client) runs. However, note that server-side connections that require Windows authentication for databases like SQL Server may encounter problems in this case. That's because the DiffDog Server service runs as a separate user that might not have access to the database. The workaround in this case is to define the data source in the client configuration file[41]—since the DiffDog Command Line Client runs as the user running the `data-diff` command.

Data sources overview
Each data source must provide one table, view or some custom named recordset retrieved by a SQL query. To specify this, set the `table` or `sql` options below; they are mutually exclusive. Importantly, for each table, view, or recordset, there should be at least one column which guarantees the uniqueness of each row. This column (or multiple columns) are subsequently referred to as the "key" columns. If the table has a primary key, a key column already exists and the uniqueness of the row is guaranteed. Otherwise, it is recommended that you specify one or more columns that should be treated as "key" columns. You can do this by setting the `key-columns-by-name` and `key-columns-by-ordinal` options below.

A data source will be named in the **[datadiff]** section (which defines a comparison job[62]) as one of the sides in a comparison.

The parameters that may be present in a **[datasource]** section of the configuration file are listed below. See the Datasource Examples[60] in the next topic.

type

Mandatory parameter. Specifies the type of the database connection. Valid values are `ado`, `adonet`, `csv`, `jdbc`, `odbc`, `postgresql`, and `sqlite`.

```
type=sqlite
```

Connections of type `csv`, `postgresql`, and `sqlite` are built-in and do not require any drivers. For other database kinds, choose a database connection method that is suitable for the machine that will be running the comparison job. Such connections require that the corresponding database drivers be installed on the machine. For more information, see Supported Databases[53].

path

Specifies the path to the database file. It is applicable for CSV files and SQLite databases. Do not set this parameter if you set the `connection` parameter, because they are mutually exclusive.

```
path=C:\Articles.sqlite
path=C:\data.csv
```

connection

Conditional parameter. Specifies the database connection string.

- Do not set this parameter if you set the `path` parameter, because they are mutually exclusive.

- Call the db-drivers [84] command to view connections available on the local machine, displayed in a format that you can copy-paste.
- If you have licensed DatabaseSpy, you can create a database connection from there, and then reuse the connection details as displayed in the Properties window.

SQL Server (ADO)

```
connection=Data Source=DBSQLSERV;UserID=altova_user;Password=dhjdf84h;
Provider=SQLNCLI11.1;Initial Catalog=NANONULL;Persist Security Info=true
```

DB2 (JDBC)

```
connection=jdbc:db2://mydb2-105:50000/NANONULL
```

Oracle (JDBC)

```
connection=jdbc:oracle:thin:@dbora12c:1521:orcl12c
```

PostgreSQL (Native)

```
connection=my.dbserver.com
```

- For native PostgreSQL connections, the `connection` can also be the IP address of the database server, for example, **`127.0.0.1`**.
- The database and port of a native PostgreSQL connection are specified in the `database` and `port` options.

extend-classpath

This parameter is applicable only for JDBC connections. It is optional and enables you to extend the Java class path on the machine where DiffDog Server runs. This could be useful, for example, when you do not have the means or privileges to change the operating system's `CLASSPATH` environment variable. Note that there is no need to set this value if all the class paths required by the JDBC connection are already set via the `CLASSPATH` environment variable. If you set this value, then it will be taken in consideration in addition to the value that may already be set in the `CLASSPATH` environment variable.

For example, the following value adds two .jar files to the class path in order to establish a connection to an IBM DB2 database:

```
extend-classpath=C:\jdbc\db2\db2jcc.jar;C:\jdbc\db2\db2jcc_license_cu.jar
```

The JDBC driver paths defined in the `CLASSPATH` variable, as well as any **`.jar`** file paths specified in the **`extend-classpath`** parameter are all supplied to the Java Virtual Machine (JVM). The JVM then decides which drivers to use in order to establish a connection. It is recommended to keep track of Java classes loaded into the JVM so as not to create potential JDBC driver conflicts and avoid unexpected results when connecting to the database.

database

Mandatory and applicable only for native PostgreSQL connections. Specifies the database of the PostgreSQL connection.

```
database = ZooDB
```

port

Specifies the port of the PostgreSQL database connection. Applicable only for native PostgreSQL database connections.

separator

Optional parameter. Applicable only for CSV data sources. It indicates the field separator used in the CSV file. If not specified, the default separator is assumed to be comma. Valid values are `comma` (default), `tab`, and `semicolon`.

```
separator=comma
```

table

Conditional parameter. Specifies the full name of the database table or view to be used in the left or right part of the comparison. If you configure this parameter, do not set the `sql` parameter, because they are mutually exclusive.

SQL Server

```
table=[HR].[dbo].[Employees]
```

IBM DB2

```
table="ALTOVA_ADMIN"."customers"
```

Tip: If you have DatabaseSpy installed, you can easily obtain the full table name by right-clicking the table in Online Browser, and then selecting **Show in new SQL Editor | Path** from the context menu.

key-columns-by-name

For each table, view, or recordset, there should be at least one column which guarantees the uniqueness of each row. This column (or multiple columns) are subsequently referred to as the "key" columns. If the table has a primary key, a key column already exists and the uniqueness of the row is guaranteed. Otherwise, it is recommended that you specify one or more columns that should be treated as "key" columns. These don't necessarily have to be columns that are part of an actual primary or unique key on the table.

```
key-columns-by-name="guid"
key-columns-by-name="first_name","last_name","email"
```

Defining "key" columns is optional but should be done as best practice. If you don't define the "key" columns, the application will determine them automatically, but this may not work consistently across all database drivers. Also, detection works for tables or views only, so it is recommended that you define the "key" columns explicitly if you are using SQL queries that return computed values or results returned by stored procedures.

If you specify key columns, then the number of key columns must be the same for the "left" and "right" data source. For example, if you specify two key columns for the left data source and only one key column for the right data source, the comparison will fail with an error.

In the case of CSV files, you can refer to key columns by name as follows:

- If the first row of the CSV file contains the column names, you can use the column name. For example: **`key-columns-by-name="first","last"`**.

- If there is no header row in the CSV file, you can use the conventional names c1, c2, c3, and so on, where each number identifies that respective column. For example: **`key-columns-by-name=c1,c2`**.

key-columns-by-ordinal

You can specify a "key" column either by name (*see above*) or by its ordinal number in the table, starting with 1. This option lets you specify key columns by their ordinal number.

```
key-columns-by-ordinal=1
key-columns-by-ordinal=1,2,5
```

Note: If you specify key columns, then the number of key columns must be the same for the "left" and "right" data source.

user

Conditional parameter. Specifies the username required to connect to the database. This parameter is not necessary if the database accepts anonymous connections, or if the connection string already includes the username (see the `connection` parameter).

pass

Conditional parameter. Specifies the password required to connect to the database. This parameter is not necessary if the database accepts anonymous connections, or if the connection string already includes the password (see the `connection` parameter).

assembly

This option is mandatory for ADO.NET connections. Run the db-drivers [84] command to view .NET assemblies available on the local machine, displayed in a format that you can copy-paste.

.NET Framework Data Provider for SQL Server

```
assembly=System.Data.SqlClient.SqlClientFactory, System.Data,
Version=4.0.0.0, Culture=neutral, PublicKeyToken=b77a5c561934e089
```

.NET Framework Data Provider for IBM i

```
assembly=IBM.Data.DB2.iSeries.iDB2Factory, IBM.Data.DB2.iSeries,
Version=12.0.0.0, Culture=neutral, PublicKeyToken=9cdb2ebfb1f93a26
```

class

This option is mandatory for ADO.NET and JDBC connections. Run the db-drivers [84] command to view the JDBC drivers available on the local machine, displayed in a format that you can copy-paste.

IBM DB2 via JDBC

```
class=com.ibm.db2.jcc.DB2Driver
```

MySQL via JDBC

```
class=com.mysql.jdbc.Driver
```

SQL Server via ADO.NET

```
class=System.Data.SqlClient
```

sql

Conditional parameter. Specifies a `SELECT` query in the syntax of the current database. The recordset retrieved by the `SELECT` query may be used as the left or right part of the comparison. If you set this parameter, do not set the `table` parameter, because they are mutually exclusive. If you specify a stored procedure call, it is expected that the stored procedure returns a recordset, not just output parameters.

SELECT query

```
sql="SELECT * FROM employees WHERE a > 5 and b < 6 ORDER BY c"
```

Stored procedure

```
sql="EXEC dbo.uspGetEmployeeManagers @BusinessEntityID = 50"
```

has-header-row

Optional parameter. Applicable only for CSV files. Valid values are `true` or `false`. If set to `true`, the first row of the CSV file is treated as a header column and does not take part in the comparison.

```
has-header-row=true
```

4.3.3 Datasource Examples

The following are some example data sources illustrative for various file or database kinds and connection methods. Use this syntax to create a **`[datasource]`** section in a client or server configuration .ini file. Note that there may be more than one way to connect to the same database. For example, on Windows, you can connect to a MySQL database using any of the following connections methods: ADO.NET, JDBC, or ODBC.

Access (ADO)

```
[datasource:access_data]
type = ado
connection = Data Source=C:
\Users\altova\Documents\ZooDB.mdb;Provider=Microsoft.Jet.OLEDB.4.0
table = [ZooDB].[tblAnimals]
```

CSV

```
[datasource:csv_data]
type=csv
path=C:\data.csv
separator=comma
key-columns-by-ordinal=1
has-header-row=false
```

IBM DB2 (JDBC)

```
[datasource:db2_data]
type = jdbc
connection = jdbc:db2://db2server:50000/PRODUCTSDB
class = com.ibm.db2.jcc.DB2Driver
```

```
user = dbuser
pass = 75gfljh9
table = "DB_USER"."PRODUCTS"
```

IBM DB2 for i (JDBC)

```
[datasource:db2_i_data]
type = jdbc
connection = jdbc:as400://127.0.0.1
class = com.ibm.as400.access.AS400JDBCDriver
user = DBUSER
pass = 75gfljh9
table = "DBUSER"."PRODUCTS"
```

MariaDB (ODBC)

```
[datasource:mariadb_data]
type = odbc
connection = Dsn=datasource_mariadb
database = nanonull
user = dbuser
pass = 75gfljh9
table = 'nanonull#.'products'
```

MySQL (ODBC)

```
[datasource:mysql_data]
type = odbc
connection = Dsn=datasource_mysql;
database = zoo
user = dbuser
pass = 75gfljh9
table = 'zoo'.'products'
```

Oracle (JDBC)

```
[datasource:oracle_data]
type = jdbc
connection = jdbc:oracle:thin:@ora12c:1521:orcl12c
class = oracle.jdbc.driver.OracleDriver
user = dbuser
pass = 75gfljh9
table = "DBUSER"."PRODUCTS"
```

PostgreSQL (Native)

```
[datasource:postgresql_data]
type = postgresql
connection = localhost
database = zoo
user = dbuser
pass = 75gfljh9
table = "zoo"."public"."animals"
```

SQLite (Native)

```
[datasource:sqlite_data]
type = sqlite
path = c:\comparisons\db\Nanonull.sqlite
table = "main"."products"
```

SQL Server (ADO.NET)

```
[datasource:sqlserver_data]
type = adonet
connection = Data Source=SQLSERV16;Initial
Catalog=NANONULL;MultipleActiveResultSets=True;Password=7hiu57;Persist Security
Info=True;User ID=altova
assembly = System.Data.SqlClient.SqlClientFactory, System.Data, Version=4.0.0.0,
Culture=neutral, PublicKeyToken=b77a5c561934e089
class = System.Data.SqlClient
table = [NANONULL].[dbo].[PRODUCTS]
```

Teradata (JDBC)

```
[datasource:teradata_data]
type = jdbc
connection = jdbc:teradata://teradata16/database=nanonull
class = com.teradata.jdbc.TeraDriver
user = dbuser
pass = 75gfljh9
table = "nanonull"."products"
```

4.3.4 [datadiff]: Configure a Comparison

A data comparison is defined in a **[datadiff]** section of a client configuration file[41] or server configuration file[39] and then executed by calling the **data-diff**[85] command with DiffDog Server like this:

```
diffdogcmdlclient data-diff --c=client_config.ini reports
```

To create the data comparison in the configuration, add a new **[datadiff:<name>]** section, where `<name>` is the unique name by which you want to identify this data comparison. In the **[datadiff]** section, you essentially specify what should be the "left" and "right" data sources. The data sources must already have been configured as described in [datasource]: Set up Data Sources[55].

The parameters that may be present in a `[datadiff]` section are listed below.

enable-driver-logging

Optional parameter. Turn it on if you need the database driver to return more detailed information in case of errors. Note that enabling this option may slow down execution.

```
enable-driver-logging=true
```

server-left, server-right

Conditional parameter. This option lets you specify that the left or right data source of the comparison is defined in the server configuration file (not the client configuration file). The option must point to a named data source as it is defined in the server configuration file on the machine where DiffDog Server runs. To point to a data source on the machine where the client CLI executable runs, use the `left` and `right` options instead (*see below*).

```
server-left=products
server-right=resourcesdb
```

left, right

Conditional parameter. This option sets the left or right side of the comparison. The option must refer to a named data source `[datasource:<some_name>]` as it was defined in the client configuration file [41] on the machine where the comparison runs.

```
left=hr
right=testdb
```

If you don't set these options, then the `server-left` or `server-right` options must be set instead (*see above*). Combined comparison between client data sources and server data sources are also possible. For example:

```
left=hr
server-right=testdb
```

In the example above, the data source **`hr`** is on the machine where client CLI executable runs, whereas the data source **`testdb`** is defined in the server configuration file [39] on the machine where DiffDog Server runs.

map

Optional parameter. This option specifies which columns on the left side should be compared to which columns from the right side. For example, you might want to compare columns *col1, col2, col3* from the "left" table with columns *colA, colB, colC*, respectively, from the "right" recordset. To indicate a column, you can specify either the ordinal number of the column, starting with 1, or the column name. If you use the column name, the name must be enclosed within quotes.

```
map = 1=>"col2", 2=>"col3", "h"=>6, "i"=>"x"
```

For each pair of columns shown above, the mapping is: `left-side column  => right-side column`.

In the case of CSV files, you can refer to columns by using either the column name (if the first row is a header), or by using **`c1`**, **`c2`**, and so on, where the number corresponds to the column index, starting with 1. For example, the left side in this mapping is a DB while right side is a CSV file:

```
map=1=>c1,2=>c2
```

If you don't define column mappings, the application will attempt to map columns automatically based on the name and data type. However, this is not guaranteed to work correctly, especially if the columns on the left and right have different names and types.

xml-aware

Optional parameter. When enabled, this option performs XML (not text) comparison for database fields of XML type. This applies only to fields whose data type is recognized by the driver as XML. Database fields which store XML as `varchar` or `clob` are not affected by this option. If you need to treat such fields as XML type, use the `sql` option instead of `table` and perform type conversion to XML by means of SQL queries.

If you set this option, any XML comparison options present in the configuration file or specified at the command line will apply as well. On Windows, if DiffDog is installed on the same machine as the client CLI executable, then XML options present in the registry will apply as well. DiffDog Server does not read the Windows registry options. You can always view the current configuration options of the client by running the showcfg 80 command. To view the configuration options of the server, run the showcfg command of the server executable.

For reference to all XML comparison options, see the diff 100 command.

whitespace-mode

Optional parameter. Applicable only for database fields of text type such as `varchar`, `clob`, and so on. The option defines how whitespace characters should be treated for comparison. Whitespace characters are any of the following: space, tab, carriage return, and line feed.

normalize	Text A is equal to Text B if, after normalization, characters in Text A correspond to those in Text B. "Normalization" means that multiple consecutive occurrences of whitespace characters are replaced by a single space character. In addition, the leading and trailing whitespace characters are trimmed for each line of text.
strip	Text A is considered equal to Text B if, after stripping whitespace characters, characters in Text A correspond to those in Text B. In other words, any whitespace characters are stripped from the text and considered not relevant for comparison.

ignore-case

Optional parameter. Applicable only for database fields of text types such as `varchar`, `clob`, and so on. Valid values are `false` (the default) and `true`, which specify, respectively, case-sensitive and case-insensitive comparisons.

server-output-path

Optional parameter. Specifies the path to which the comparison results will be saved on the server machine. If this parameter not set, the comparison output will be displayed at the command line (assuming that the option `-quiet=true` has not been set).

```
server-output-path=/path/on/server.xml
```

If the client and server both run on the same machine, you can use `server-output-path` and `client-output-path` interchangeably.

client-output-path

Optional parameter. Specifies the path to which the comparison results will be saved on the client machine. If this parameter not set, the comparison output will be displayed at the command line (assuming that the option `-quiet=true` has not been set).

```
client-output-path=/path/on/client.xml
```

If the client and server both run on the same machine, you can use `server-output-path` and `client-output-path` interchangeably.

output-mode

Optional parameter. Specifies the output format of the comparison result. Valid values are `text`, `xml`, and `sql`. For example:

```
output-mode=xml
```

When this option is not set, the default value is **`text`**. Note that the value **`sql`** should be used only when the right side of the comparison is a database. When `output-mode=sql`, the comparison report will include SQL scripts required to merge data from the left to the right side.

treat-null-as-empty

Optional parameter. Enable this option only if you need to treat `NULL` database values as empty strings.

```
treat-null-as-empty=false
```

For example, by default, a comparison between the two recordsets illustrated below will result in a difference, because the second row on the left is empty and *not* equal to the second row on the right. However, if you set the `treat-null-as-empty` option to **`true`**, both recordsets will be considered equal.

data
[NULL]
[NULL]

data
[NULL]
[NULL]
[NULL]

4.3.5 Compare CSV Data

DiffDog Server can compare data in comma-separated, semicolon-separated, and tab- separated files (CSV, TSV files) against each other as well as against data in DBs. Files that meet the following criteria are eligible for comparison:

- Each line (row) must contain the same number of fields throughout the file. The file extension is not important.
- The field separators must be one of the following: comma, semicolon, or tab.

Since a CSV file is in fact tabular data, you can compare it with data from a database table, view, or custom recordset.

You can compare CSV files in the same two ways as you compare DB data:

- Set up the comparison job in the client or server config file by using [datasource] 55 and [datadiff] 62.
- On Windows, create the comparison job in DiffDog Enterprise and save it as a `.dbdif` files, then run the job on the server.

You can use either method to also compare CSV data against DB data. Both methods are described in more detail below.

Comparison in the config file

A CSV comparison can be set up in either the client config file 41 or server config file 39 as follows.

1. Add a data source 55 that represents the "left" side of comparison to the configuration file. For CSV files, a typical data source would look like this.

   ```
   [datasource:left_data]
   type=csv
   path=C:\left.csv
   separator=comma
   key-columns-by-ordinal=1
   has-header-row=false
   ```

2. Add the second data source (the "right" side of the comparison).

   ```
   [datasource:right_data]
   type=csv
   path=C:\right.csv
   separator=comma
   key-columns-by-ordinal=1
   has-header-row=false
   ```

3. Add a data comparison job where you indicate what is the left and right data source, the columns to be compared, and other parameters. The `map` option lets you specify which columns take part in the comparison (the first and second columns, in this example).

   ```
   [datadiff:reports]
   left=left_data
   right=right_data
   map=1=>1,2=>2
   output-mode=xml
   ```

   In this example, the output of the CSV comparison is reported as XML, as shown by the `output-mode=xml` option. If the right side of the comparison is a database, you can also use `output-mode=sql`, and in this way you can obtain SQL scripts to merge data from the left to the right side. By default, the report is displayed at the command line, but you can optionally redirect it to a file 62, by adding the `client-output-path` option: `client-output-path=/home/report.xml`

4. Call the executable and run the data-diff 85 command. In the code listing below, the configuration file is supplied using the `--c` option and the job name is supplied as the argument:

```
diffdogcmdlclient data-diff --c=client_config.ini reports
```

You can also set or override the output format for the comparison report at the command line, by adding the --output-mode[85] option, for example:

```
diffdogcmdlclient data-diff --c=client_config.ini reports --output-mode=xml
```

Running comparisons created in DiffDog Enterprise (Windows only)

This option uses a comparison file (in **.dbdif** format) created with DiffDog Enterprise. To run the **.dbdif** file, DiffDog Server must run on Windows. This is because the **.dbdif** files created with DiffDog store paths using Windows syntax.

To run the comparison, do the following:

1. Create the **.dbdif** file in DiffDog Enterprise. See the DiffDog user manual for instructions about how to do this.
2. On the server side, use either the server or client executable[78] to call the run[100] command:

```
diffdogserver run <dbdiff-file>
diffdogcmdlclient run <dbdiff-file>
```

Note the following points:

- For the comparison to run successfully, all the CSV file paths that were added on the desktop machine must be valid on the server machine.
- If database connections are involved, the server machine must be configured and capable of handling the connection. For example, if the **.dbdif** file includes a connection that requires on ODBC driver from the database vendor, then that driver must be installed on the server machine. *See Supported Databases*[53].

5 Comparison Results

When you run a comparison, the outcome of the comparison is reported by an exit code. For example, the following batch scripts run a comparison between two files. On Windows, it gets the exit code from the `%ERRORLEVEL%` environment variable. The equivalent Linux script is given further below.

Windows

```
SET DIFFDOGSERVER="C:\Program Files\Altova\DiffDogServer2025\bin\DiffDogServer.exe"
%DIFFDOGSERVER% diff book1.xml book2.xml --mode=xml
ECHO %ERRORLEVEL%
```

Linux

```
#!/bin/bash
DIFFDOGSERVER=/opt/Altova/DiffDogServer2025/bin/diffdogserver
${DIFFDOGSERVER} diff book1.xml book2.xml --mode=xml
echo $?
```

Exit codes

When you run a data-differencing command, the result is an exit code that is output to the command line. The table below lists the various exit codes and the meaning of each code.

Exit code	Meaning
0	No differences exist
1	Differences exist
2	An error has occurred

When differences exist (that is, when Exit code = 1), you can also view a detailed comparison report directly at the command line. You can optionally output the report in XML or text format. To specify the output format as text or xml, set the `--output-mode` 88 option. See below for details.

Report formats

The following table lists the report formats that are available for various types of comparison. You can use the CLI command's `--output-mode` 88 option to specify the report format.

Type of comparison	XML report	Text report
Text files	Yes	Yes
Word documents	Yes	No
XML files	Yes	No
Binary files	No	No
Directories	Yes	Yes

Note the following points:

- The option --output-mode=text is not supported when comparing XML files or Word documents.
- Because of the nature of binary files, only an exit code is generated; no report is generated.

Output to command line or to file
By default, the report containing comparison results is displayed at the command line. You can also additionally redirect output to a file with the `--output-file` option. To suppress the output, set the option `--quiet=true`. So if you want to output the report only to file (and not to the command line), then use the `--output-file` option together with the `--quiet=true` option.

For example, the commands below compare two text files using text comparison mode (**`--mode=text`**) and outputs the report in XML format (**`--output-mode=xml`**). For the differences in the output, see the comments below.

```
diffdogserver diff a.txt b.txt --mode=text --output-mode=xml --output-file=out.xml
diffdogserver diff a.txt b.txt --mode=text --output-mode=xml --output-file=out.xml --
quiet=true
diffdogserver diff a.txt b.txt --mode=text --output-mode=xml --quiet=true
```

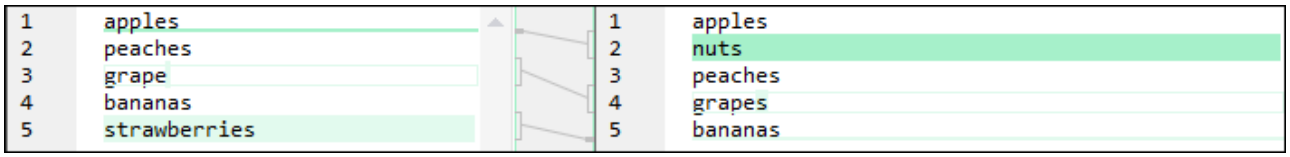
- The first command generates the report to the command line as well as to a file named `out.xml` (**`--output-file=out.xml`**).
- The second command generates the report only to a file named `out.xml` (**`--output-file=out.xml`** `--quiet=true`).
- The third command generates no report (`--quiet=true`, no **`--output-file`** option).

5.1 Text Files

When comparing files in text mode (set with the CLI option `--mode=text`[88]), you can view the comparison report in either text or XML format (set with `--output-mode`[88]). To understand how DiffDog Server reports differences between text files, let's assume that the following two text files must be compared side-by-side. (Note that text files include, not only `.txt` files, but also any other kind of non-binary file, such as `.html`, `.json`, `.js`, and `.cs`.)

apples peaches grape bananas strawberries	apples nuts peaches grapes bananas
file1.txt	*file2.txt*

When the two files are compared in the graphical interface of DiffDog (*screenshot below*), the differences between the two files can be seen clearly, as shown below. In *file2.txt*, Line 2 has been added, Line 4 is different, and Line 6 is missing.



In DiffDog Server, you can run the command below to compare these two text files and receive a comparison report in text format.

```
diffdogcmdlclient diff file1.txt file2.txt --mode=text --output-mode=text --output-file=report.txt
```

- The `--mode` option treats the compared files as text (not as XML or binary).
- The `--output-mode` option specifies the format of the comparison report (text or XML).
- The `--output-file` option specifies the path to the generated report file.
- Since there is no `--quiet=true` option, the comparison report will be generated to the command line as well as to an output file. *See "Report formats" in the topic Comparison Results*[68].

In the sections below, we describe how the comparison results are displayed in text and XML reports, respectively.

Text report

In the text report produced after running the comparison, the differences are reported as follows:

```
1a2
> nuts
3c4
< grape
---
> grapes
```

```
5d5
< strawberries
```

In the report above, "a" in "1a2" indicates an addition; "c" in "3c4" indicates a change; and "d" in "5d5" indicates a deletion. The numbers on either side of the letter are the line numbers in the left and right file, respectively. The characters ">" and "<" indicate the right and left file, respectively, and the lines in which they occur indicate (i) what has been added where; (ii) what is different where; and (iii) what is missing where (showing the text in the file where it is present).

The results should be understood as instructions to be followed in order to make both files equal.

- **1a2** means "After line 1 in the left file, add the indicated text to make it equal with line 2 of the right file". The next line shows the text to be added. In our example, the text "nuts" in the right file is to be added to the left file.
- **3c4** means "Replace line 3 of the left file with line 4 of the right file". The next lines shows the relevant content from both files, separated by "---".
- **5d5** means "Delete line 5 of the left file to make it equal with line 5 in the right file". The next line shows the text to be deleted (in this case, "strawberries").

XML report

You can also compare the same two files and get the report as XML file, by running the following command:

```
diffdogcmdlclient diff file1.txt file2.txt --mode=text --output-mode=xml --output-
file=report.xml
```

The text-format report shown above would, in XML format, appear as shown below.

```
<?xml version="1.0" encoding="UTF-8"?>
<!-- Differencing export generated by Altova DiffDog Server -->
<diff_result>
   <diff_info comparison_mode="text">
      <source_left name="c:\file1.txt" uri="file:///c:/file1.txt"/>
      <source_right name="c:\file2.txt" uri="file:///c:/file2.txt"/>
   </diff_info>
   <text_diff left_location="1" right_location="2">
      <right_content>
         <line>nuts</line>
      </right_content>
   </text_diff>
   <text_diff left_location="3" right_location="4">
      <left_content>
         <line>grape</line>
      </left_content>
      <right_content>
         <line>grapes</line>
      </right_content>
   </text_diff>
   <text_diff left_location="5" right_location="5">
      <left_content>
         <line>strawberries</line>
      </left_content>
```

```
    </text_diff>
</diff_result>
```

Note the following points about the XML report:

- The **diff_info** element at the top supplies information about files that were compared, including the comparison mode used and the paths of the compared files. This element occurs only once. (The **comparison_mode** attribute indicates the value supplied for the `--mode` option at the command line—or the option's default value if no value was supplied at the command line.)
- The **text_diff** elements itemize the text differences found. Their **left_location** and **right_location** attributes give the lines in the respective files where the difference occurs.
- The **left_content** and **right_content** elements, respectively, contain the lines that are different in each **text_diff**. If both **left_content** and **right_content** are present, then a textual difference within a line is indicated. However, if only one of **left_content** or **right_content** is present, then either an additional line or a deleted line is indicated.
- The **line** element contains the text that is different. If multiple lines are involved in the difference, then there will be multiple consecutive **line** elements in the **text_diff** element.

5.2 XML Files

When comparing files in XML mode (set with the CLI option `--mode=xml`[88]), you can view the comparison report in XML format only (`--output-mode=xml`[88]). To understand how differences are reported in XML format, let's assume that the following two XML files must be compared side-by-side.

`<book id="1">`
`  <author>Mark Twain</author>`
`</book>`
	`<book id="2">`
	`  <author>Franz Kafka</author>`
	`</book>`

It can be seen that there are two differences: (i) in the value of the **book** element's **id** attribute in line 1; and (ii) in the text content of the **author** element in line 2.

In DiffDog Server, you can run the command below to compare these two XML files and receive a comparison report in XML format.

```
diffdogcmdlclient diff file1.xml file2.xml --mode=xml --output-mode=xml --output-file=report.xml
```

- The `--mode` option treats the compared files as XML (not as text or binary).
- The `--output-mode` option for XML (mode) comparisons must be XML.
- The `--output-file` option specifies the path to the generated report file.
- Since there is no `--quiet=true` option, the comparison report will be generated to the command line as well as to an output file. *See "Report formats" in the topic Comparison Results*[68].

XML report

In the XML report produced after running the comparison, the differences are reported as follows:

```
<?xml version="1.0" encoding="UTF-8"?>
<!-- Differencing export generated by Altova DiffDog Server -->
<diff_result>
   <diff_info comparison_mode="xml">
      <source_left name="c:\file1.xml" uri="file:///c:/file1.xml"/>
      <source_right name="c:\file2.xml" uri="file:///c:/file2.xml"/>
   </diff_info>
   <xml_diff>
      <left_location>
         <parent xpath="/book"/>
         <position>1</position>
      </left_location>
      <right_location>
         <parent xpath="/book"/>
         <position>1</position>
      </right_location>
      <left_content>
         <attribute id="1"/>
      </left_content>
      <right_content>
         <attribute id="2"/>
      </right_content>
```

```
    </xml_diff>
    <xml_diff>
       <left_location>
          <parent xpath="/book/author"/>
          <position>1</position>
       </left_location>
       <right_location>
          <parent xpath="/book/author"/>
          <position>1</position>
       </right_location>
       <left_content>
          <element>Mark Twain</element>
       </left_content>
       <right_content>
          <element>Franz Kafka</element>
       </right_content>
    </xml_diff>
</diff_result>
```

The following points describe the XML report:

- The **diff_info** element at the top supplies information about files that were compared, including the comparison mode used and the paths of the compared files. This element occurs only once. (The **comparison_mode** attribute indicates the value supplied for the `--mode` option at the command line—or the option's default value if no value was supplied at the command line.)
- The **xml_diff** elements itemize the XML differences found. Their **left_location** and **right_location** child elements, each locate the parent node of the node containing the difference.
- The **parent** node has an **xpath** attribute that gives an XPath locator expression of the parent node, and the **position** element gives the position of the parent within its context nodeset.
- In the first difference (see the source XML files at the top of this topic), the node containing the difference is the **id** attribute of the single **book** element. So the parent of the **@id** node is **book**, that is, the **/book** element at position 1 (since there is only one **book** element; it is the single, root element of the document).
- In the second difference (see the source XML files at the top of this topic), the node containing the difference is the text node of the single **author** child of the **book** element. The parent of this text node, therefore, is the **author** node at position 1 in the nodeset returned by the locator expression **/book/author**.
- The **left_content** and **right_content** elements, respectively, contain the nodes that are different in each **xml_diff**. In our example above, notice that, in the first **xml_diff**, the node that is different is the **id** attribute of **/book**, whereas in the second **xml_diff**, it is the text content of the **author** element that is different.

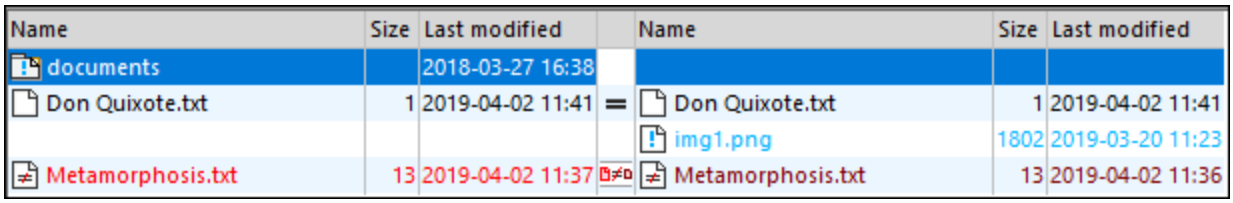
5.3 Directories

When comparing directories, you can view the comparison report in either text or XML format (set with `--output-mode`[88]). (Note, however, that reports in XML format are not supported if `--dir-compare-contents=true`; this is because the result of comparing XML files can be reported only in XML format[73].) To understand how DiffDog Server reports differences between directories, let's assume that the following two directories must be compared side-by-side.

`dir1/`
`|-- documents/`
`|-- Don Quixote.txt`
`|-- Metamorphosis.txt`
	`dir2/`
	`|-- Don Quixote.txt`
	`|-- img1.png`
	`|-- Metamorphosis.txt`

dir1	*dir2*

When the two directories are compared in the graphical interface of DiffDog (*screenshot below*), the differences between the two directories can be seen clearly, as shown below. The sub-directory **`documents`** is missing in *dir2*, the file **`img1.png`** is missing in *dir1*, and the file **`Metamorphosis.txt`** has different modification times.



In DiffDog Server, you can run the command below to compare these two directories and receive a comparison report in text format.

```
diffdogcmdlclient diff dir1 dir2 --output-mode=text --output-file=report.txt --dir-compare-sizes=true --dir-compare-mod-times=true
```

- The `--output-mode` and `--output-file` options set the report format to text and specify the location where the report will be saved.
- The directory comparison is "quick" because file contents are not searched (the `--dir-compare-contents` options has not been set to *true*; its default is *false*).
- Also in a "quick" comparison, only the size and modification dates of files inside the two directories are compared (`--dir-compare-sizes=true` and `--dir-compare-mod-times=true`).
- Since there is no `--quiet=true` option, the comparison report will be generated to the command line as well as to an output file. *See "Report formats" in the topic Comparison Results*[68].

Note: The DiffDog setting for "quick" directory comparisons checks directories only for the size and modification times of their files and sub-directories; the contents of files are not compared. In DiffDog Server, a "quick" comparison is the default setting. You must set the `--mode`[88] option to compare the file contents of directories.

In the sections below, we describe how the comparison results are displayed in text and XML reports, respectively.

Text report

In the text report produced after running the comparison, the differences are reported as follows:

```
< documents/
! Metamorphosis.txt
> img1.png
```

These text reports are read as follows:

- **"<"** means the object exists in the left directory only.
- **">"** means the object exists in the right directory only.
- A trailing forward slash denotes a directory—as opposed to a file (see **documents/** above).
- The **"!"** character indicates differences in the corresponding files.

XML report

Let's now run the same comparison, and change only the format of the report file from text to XML.

```
diffdogcmdlclient diff dir1 dir2 --output-mode=xml --output-file=report.xml --dir-
compare-sizes=true --dir-compare-mod-times=true
```

In the XML report produced after running the comparison, the differences are reported as follows:

```
<?xml version="1.0" encoding="UTF-8"?>
<!-- Differencing export generated by Altova DiffDog Server -->
<diff_result>
   <diff_info comparison_mode="quick">
      <source_left name="c:\dir1" uri="file:///c:/dir1"/>
      <source_right name="c:\dir2" uri="file:///c:/dir2"/>
   </diff_info>
   <file_diff location="">
      <left_content>
         <directory name="documents"/>
      </left_content>
      <changed_content>
         <file name="Metamorphosis.txt"/>
      </changed_content>
      <right_content>
         <file name="img1.png"/>
      </right_content>
   </file_diff>
</diff_result>
```

Note the following points about the XML report:

- The **diff_info** element at the top supplies information about the directories that were compared, including the comparison mode used and the paths of the compared directories. This element occurs only once. (The **comparison_mode** attribute indicates the value supplied for the `--mode` option at the command line—or the option's default value (**quick**) if no value was supplied at the command line.)
- The **file_diff** element contains the differences and occurs only once.

- Differences are listed in two types of element: (i) **left_content** or **right_content** and (ii) **changed_content**.
- The **left_content** or **right_content** element shows whether that side contains a directory or file that the other side does not contain.
- The **changed_content** element lists the directories or files that have changed.

6 Command Line (Server, Client)

The data-differencing commands of DiffDog Server can be called by (i) the server executable directly on the server or (ii) a client executable making a call to the server.

The syntax for command line interactions using the respective executables are as follows:

i. `diffdogserver [options] <command> [arguments]`
ii. `diffdogcmdlclient [options] <command> [arguments]`

Note the following points:

- The server executable, **`diffdogserver.exe`**, is located in the **`bin`** folder of the installation folder[35].
- The client executable, **`diffdogcmdlclient.exe`**, is located in the **`cmdlclient`** folder of the installation folder[35].
- On Linux, use an all-lowercase executable name.
- On Linux and macOS, you might need to add `./` before the name of the executable when calling it from the current directory of the command shell.

Data-differencing commands

The data-differencing commands of DiffDog Server are listed below and described in detail in the topics of this section.

Some commands may have two or three names. The first name is a short version, while the others are longer names. You can use any of them.

- showcfg[80]
- aliases, list-aliases[81]
- datasources, list-datasources[83]
- db-drivers, list-db-drivers[84]
- data-diff, compare-data[85]
- diff, compare[88]
- run, import, load[100]
- help[103]
- version[104]

Overview of the commands
Essentially, there are three data-differencing commands:

- data-diff, compare-data[85]: The comparison job referenced by this command is defined in a `[datadiff]` section of the server or client configuration file.
- diff, compare[88]: Enables you to compare two or three files or directories across a network. It provides a wide range of comparison options on the command line, which would override options set in the configuration files.
- run, import, load[100]: Takes as its argument one or more DiffDog comparison files. These comparison files are created in Altova DiffDog Enterprise Edition, and each file defines the files and settings of a comparison.

The other commands in this section (`showcfg`, `aliases`, `datasources`, and `db-drivers`) can be used to get information that can be used with the three data-differencing commands.

6.1 showcfg

The **showcfg** command outputs all the current server or client configuration settings in a human readable form.

The configuration settings are grouped into the following categories:

- *Global:* This group lists settings that you have defined in the configuration file[39].
- *Registry* (Windows-specific): This group lists settings that exist in the Windows Registry Editor. Any `order by` attribute lists or custom XML filters or directory filters that you have created in DiffDog will also appear here. See the `--directory-filter`, `--xml-filter`, and `--xml-order-by-attribute-list` options of the diff, compare[88] command.
- *Built-In:* This group lists settings that are built into the executable. The application will default to these settings when no other settings exist.

Syntax

```
diffdogserver showcfg
diffdogcmdlclient showcfg
```

Notes

- When used with **diffdogserver**, the command outputs the server's configuration settings.
- When used with **diffdogcmdlclient**, the command outputs the client's configuration settings.

6.2 aliases, list-aliases

If the server administrator has restricted access to server paths for security reasons, comparisons cannot use server file paths directly but must use an alias that the server administrator has assigned. This is done by specifying the alias in the `--alias` option (of the `diff, compare` 88 and `run, import, load` 100 commands). *See Aliases for Server Folders* 38 *for more information about this feature.*

The **`aliases`** or **`list-aliases`** command outputs all the aliases defined on the server, enabling you to subsequently enter the alias you want. If the `hide-alias-paths` setting in the server configuration file 39 is set to `false`, then the output displays the aliases along with the paths they reference. Otherwise, the command returns just the list of configured aliases.

Syntax

```
diffdogserver aliases [options]
diffdogcmdlclient aliases [options]
```

Notes
The `--server` and `--port` options apply to **`diffdogcmdlclient`** only. They specify the connection details of the server.

Options

- --config, --c

  Specifies the path to a client configuration file where the details of the connection to DiffDog Server are defined

  If you do not set the `--c` option, then **`diffdogcmdlclient`** attempts to read the client configuration file from the same directory as the executable. If there is no configuration file in the same directory, then the default values displayed by the `showcfg` 80 CLI command and in the topic Client Configuration File 41 are used.

- --log level, --L

  Sets the reporting level to show information, warning, or error messages. Valid values are:

  - *none:* Suppress all logging
  - *info:* Report information, warning, and error messages
  - *warning:* Report error and warning messages
  - *error:* (Default) Report only error messages

- --port

  Specifies the port on which DiffDog Server listens for requests. If this option is not set, then the port specified in the Client Configuration File 41 will be used (`29800` by default). The `--port` option overrides the setting in the config file.

- --server

  Specifies the server on which DiffDog Server listens for requests. If this option is not set, then the server specified in the Client Configuration File 41 will be used (`127.0.0.1` by default). The `--server` option

overrides the setting in the config file.

6.3 datasources, list-datasources

The **datasources** or **list-datasources** command lists all the data sources defined in the server configuration file on the machine where DiffDog Server is installed. For more information about data sources, see Setting up Data Sources 55.

Syntax

```
diffdogserver datasources [options]
diffdogcmdlclient datasources [options]
```

Notes

The `--server` and `--port` options apply to **diffdogcmdlclient** only. They specify the connection details of the server.

Options

- --config, --c

  Specifies the path to a client configuration file where the details of the connection to DiffDog Server are defined.

  If you do not set the `--c` option, then **diffdogcmdlclient** attempts to read the client configuration file from the same directory as the executable. If there is no configuration file in the same directory, then the default values displayed by the showcfg 80 CLI command and in the topic Client Configuration File 41 are used.

- --loglevel, --L

  Sets the reporting level to show information, warning, or error messages. Valid values are:

  - *none:* Suppress all logging
  - *info:* Report information, warning, and error messages
  - *warning:* Report error and warning messages
  - *error:* (Default) Report only error messages

- --port

  Specifies the port on which DiffDog Server listens for requests. If this option is not set, then the port specified in the Client Configuration File 41 will be used (`29800` by default). The `--port` option overrides the setting in the config file.

- --server

  Specifies the server on which DiffDog Server listens for requests. If this option is not set, then the server specified in the Client Configuration File 41 will be used (`127.0.0.1` by default). The `--server` option overrides the setting in the config file.

6.4 db-drivers, list-db-drivers

The **db-drivers** or **list-db-drivers** command can be useful when you need to perform database data comparisons. It displays all ADO, ADO.NET, JDBC, and ODBC drivers detected on the local machine. The displayed driver information is INI-file friendly, in that it is in the syntax required for creating database connections in the server or client **.ini** configuration files. For more information, see Setting up Data Sources 55.

The output of the command is grouped in the following sections:

- *ADO.NET:* Displays all detected .NET providers.
- *ADO:* Displays all detected ADO providers.
- *JDBC:* Displays all JDBC drivers detected automatically from the CLASSPATH environment variable.
- *ODBC:* Displays all detected ODBC data source names (DSNs). These are the same data sources that are displayed when you run the ODBC Data Source Administrator (Odbcad32.exe). Note that the 32-bit version of the Odbcad32.exe file is in the `C:\Windows\SysWoW64` directory. The 64-bit version of the Odbcad32.exe file is in the `C:\Windows\System32` directory.
- *Built-in:* Displays those database connection methods that have built-in support in DiffDog Server and do not require drivers.

Note: Only drivers that correspond to the platform of DiffDog Server (64-bit or 32-bit) are listed. For example, if the currently installed Java Virtual Machine is 64-bit, the JDBC drivers will be detected only when the command is run by DiffDog Server 64-bit. The same is true for ODBC data source names (DSNs).

Syntax

```
diffdogserver db-drivers [options]
diffdogcmdlclient db-drivers [options]
```

Options

- --config, --c

  Specifies the path to a client configuration file where the details of the connection to DiffDog Server are defined

  If you do not set the `--c` option, then **diffdogcmdlclient** attempts to read the client configuration file from the same directory as the executable. If there is no configuration file in the same directory, then the default values displayed by the `showcfg` 80 CLI command and in the topic Client Configuration File 41 are used.

- --extend-classpath=VALUE

  Use this option to specify Java class paths in addition to any class paths that are already set in the CLASSPATH environment variable. The `--extend-classpath` option has the same usage and purpose as the extend-classpath 57 parameter in the server or client configuration file.

6.5 data-diff, compare-data

The `data-diff` command runs one or more database data comparison jobs configured previously. By default, the comparison result is displayed at the command line in XML format.

Running *.dbdif files with DiffDog Server is most convenient if DiffDog Server runs either on the same computer as DiffDog desktop, or on a Windows machine. If DiffDog Server runs on a different machine or operating system, the following limitations apply:

- If the comparison involves CSV files, running .dbdif files is supported only on Windows servers. For the comparison to be successful, all the CSV file paths that were valid on the desktop machine must be valid on the server machine.
- If database connections are involved, the server machine must be configured and capable to handle the database connection. Namely, the database drivers and any other prerequisites required by the connection must be present on the target operating system as well. For example, if the .dbdif file includes a connection that requires an ODBC driver from the database vendor, that driver must be installed on the server machine as well. Note that some database connection methods supported on Windows are not supported on Linux and macOS. For more information, see Supported Databases.

If you set up comparison jobs directly in DiffDog Server (as opposed to using *.dbdif files), you can run them regardless of the platform.

Syntax

```
diffdogserver data-diff [options] {job} ...
diffdogcmdlclient data-diff [options] {job} ...
```

Notes

- The `job` argument refers to a `[datadiff]` section defined in the client configuration file.
- The `job` argument can be specified more than once in order to run multiple database comparison jobs in one run of the command.
- The `--server` and `--port` options apply to **`diffdogcmdlclient`** only. They specify the connection details of the server.
- Control the output kind (text, XML) by setting the `output-mode` option, either in the configuration file or on the command line (see *Options* below).
- The path of the output file is set from either the `client-output-path` or `server-output-path` options (see *Example* below).
- To get the comparison outcome as a numeric value, check the value of the `%ERRORLEVEL%` environment variable after running this command. The possible values are:

Exit code	Meaning
0	No differences exist
1	Differences exist
2	An error has occurred

Options

- --config, --c

Specifies the path to a client configuration file containing the datadiff information and the details of the connection to DiffDog Server.

If you do not set the `--c` option, then **`diffdogcmdlclient`** attempts to read the client configuration file from the same directory as the executable. If there is no configuration file in the same directory, then the default values displayed by the `showcfg` [80] CLI command and in the topic Client Configuration File [41] are used.

- --loglevel, --L

  Sets the reporting level to show information, warning, or error messages. Valid values are:

  - *none:* Suppress all logging
  - *info:* Report information, warning, and error messages
  - *warning:* Report error and warning messages
  - *error:* (Default) Report only error messages

- --port

  Specifies the port on which DiffDog Server listens for requests. If this option is not set, then the port specified in the Client Configuration File [41] will be used (`29800` by default). The `--port` option overrides the setting in the config file.

- --server

  Specifies the server on which DiffDog Server listens for requests. If this option is not set, then the server specified in the Client Configuration File [41] will be used (`127.0.0.1` by default). The `--server` option overrides the setting in the config file.

- --quiet, --q

  Prevents the standard output from being displayed at the command line. Valid values are:

  - *true:* Do not display standard output in the terminal window.
  - *false:* (Default) Display standard output in the terminal window.

- --output-mode, --om

  Specifies the output format of the generated report. The following values are available: `text`, `sql`, `xml`, `html`. The default option is `sql`.

  Generating the report in SQL format is meaningful when the right side of the data comparison is a database. It contains SQL statements that merge data from the left to the right side of the comparison. For example, if there are missing rows on the right, INSERT statements are generated. Conversely, if there are extra rows on the right, DELETE statements are generated. For changed values, UPDATE statements are generated.

  However, when the left side of the comparison is a database and the right side is a CSV file, then the default option is `text`.

Examples

The following command runs a single database data comparison job called `reports`.

```
diffdogserver data-diff reports
```

It is assumed that the client configuration file contains a `[datadiff:reports]` section, such as the listing below:

```
[datasource:left_data]
type = sqlite
path = c:\comparisons\db\Nanonull_Left.sqlite
table = "main"."products"

[datasource:right_data]
type = adonet
connection = Data Source=SQLSERV16;Initial
Catalog=NANONULL;MultipleActiveResultSets=True;Password=7hiu57;Persist Security
Info=True;User ID=altova
assembly = System.Data.SqlClient.SqlClientFactory, System.Data, Version=4.0.0.0,
Culture=neutral, PublicKeyToken=b77a5c561934e089
class = System.Data.SqlClient
table = [NANONULL].[dbo].[PRODUCTS]

[datadiff:reports]
left = left_data
right = right_data
map = 1 => 1, 2 => 2, 3 => 3
output-mode=text
client-output-path=c:\comparisons\db\result.txt
```

In the configuration file above, the `[datasource:left_data]` and `[datasource:right_data]` are two data sources that provide data for the left and right side of the comparison. The **`left_data`** points to table `products` from a local SQLite database. The **`right_data`** points to table `PRODUCTS` of a SQL Server database. Both tables have a primary key, so it is not necessary to specify a key column using the option `key-column-by-name`.

The `[datadiff:reports]` section sets both data sources above as, respectively, the left and right side of the comparison. In addition, it maps the columns that are to be compared. In this example, the first, second, and third columns from the left are mapped with the first, second, and third columns from the right, respectively. The comparison result is set to be in text format and to be saved to a local text file.

For a complete set of options that can be defined in a data source, see how to set up data sources 55. For information about the options you can define in a database comparison job, see Set up CSV and Database Comparisons 62.

6.6 diff, compare

The **diff** or **compare** command performs a side-by-side comparison of two files, directories, or URLs. The entities to be compared can be of different kinds (for example, you can compare a file URL like `http://server/file.txt` to a file path like `C:\file.txt`). Note that it is valid to compare files with URLs, for example, but not files and directories (or URLs and directories). Comparison of Microsoft Word 2003 or later documents (**.docx, .dotx**) is also supported. *See* *Comparing Word Documents* 51.

Most often, a comparison involves a "left" side and a "right" side to compare. However, three-way comparisons are also possible when comparing files or URLs—but not directories. The files or directories to be compared can all be on a DiffDog Server machine or on a DiffDog client machine. You can also compare local files or directories with remote ones. *For examples, see* *Running Comparisons* 48.

Comparison result
The format of the output comparison result can be text, XML, or HTML and is selected by the `--output-mode` option. By default the output is not quiet, which means that it will be displayed at the command line. Set the `--quiet` option to `true` suppress the display at the command line. Output can additionally be sent to file by using `--output-file` option. **Tip:** If you get an empty output file, try changing the `--mode` option, which specifies the type of comparison to be performed.

Syntax

```
diffdogserver diff [options] {path path [path]}
diffdogcmdlclient diff [options] {path path [path]}
```

Notes

- A `path` may be a file or directory path, or a URL path in the format `http://server/segment`.
- You can supply two paths or three paths as the arguments.
- You can supply paths not only as arguments, but also by setting the options `--client-left, --client-right`, or `--server-left, --server-right` (*see below*). Use the second alternative if the client does not run on the same machine as DiffDog Server.
- The paths must not be specified as a mix of arguments and options; they must be specified as one or the other.
- The `job` argument can be specified more than once in order to run multiple database comparison jobs in one run of the command.
- The `--server` and `--port` options apply to **diffdogcmdlclient** only. They specify the connection details of the server.

Options

The options below are listed in alphabetical order. You can specify defaults for most of the options below in the client configuration file 41. If you use a client configuration file, note the following:

- When an option is set at the command line but it is commented out in client configuration file, the command line option applies.
- When an option is set both at the command line and in a client configuration file, the command line option applies.
- When an option is not set at the command line but is set (uncommented) in configuration file, the configuration file option applies.
- When an option is set neither at the command line nor in the configuration file, it takes the default value as described in the command line help and in the documentation below.

- --alias, --a

  If the server administrator has restricted access to server paths for security reasons, comparisons cannot use server file paths directly but must use an alias that the server administrator has assigned. This is done by specifying the alias in the `--alias` option (of the `diff, compare` 88 and `run, import, load` 100 commands). *See Aliases for Server Folders* 38 *for more information about this feature.*

  This option is meaningful if the comparison involves a server path (that is, if options `--server-left` or `--server-right` are set). Valid values for this option are aliases as defined in the Server Configuration File 39. To output the list of available aliases, run the `aliases` 81 command. For more information, see Restricting Access to Server Paths 38.

- --client-left, --cl

  Specifies the left side of the comparison. It must be a path to a local file or directory.

- --client-middle, --cm

  In a three-way comparison, it specifies the local path to the "middle" file.

- --client-right, --cr

  Specifies the right side of the comparison. It must be a path to a local file or directory.

- --config, --c

  Specifies the path to a client configuration file containing the datadiff information and the details of the connection to DiffDog Server.

  If you do not set the `--c` option, then **`diffdogcmdlclient`** attempts to read the client configuration file from the same directory as the executable. If there is no configuration file in the same directory, then the default values displayed by the `showcfg` 80 CLI command and in the topic Client Configuration File 41 are used.

- --dir-compare-contents, --dc

  Specifies whether a directory comparison should compare file contents in addition to any other options that might be set separately, such as file size or modification date. When set to `false`, the comparison ignores file contents, which will result in a faster, though less accurate, comparison. By default, this option is set to `false`.

- --dir-compare-mod-times-ignore-seconds, --di

  Applicable for directory comparisons. It specifies that directory comparison should ignore the given number of seconds (+/-) when comparing modification times. By default, it is set to **0**, which means the comparison will not ignore modification time differences.

- --dir-ignore-case, --dic

  Applicable for directory comparisons. The default value is `false`, which means that a case-sensitive comparison is performed.

- --dir-compare-sizes, --ds

Applicable for directory comparisons. When set to `true`, directory comparisons include file size; if not, file size is ignored. The default value is `false`.

- --dir-compare-mod-times, --dt

  Applicable for directory comparisons. When set to `true`, directory comparisons include modification time; if not, modification time is ignored. The default value is `false`.

- --directory-filter, --df

  This option is applicable for directory comparisons. Directory filters enable you to include or exclude certain files or sub-directories from the comparison based on criteria you define. Valid values for this option are directory filters as they are defined in the Client Configuration File[41], in the **`[dir.filter]`** group. For example, if the configuration file defines a filter **`[dir.filter:svn]`**, the equivalent setting at the command line would be the option:

  ```
  --directory-filter=svn
  ```

  On Windows, if DiffDog is installed on the same machine as DiffDog Server, then you can additionally specify any directory filter that already exists in DiffDog (either built-in or custom). For example, to set the built-in filter *"No SVN directories"* at the command line, use this:

  ```
  --directory-filter="No SVN directories"
  ```

  For more information about creating directory filters with DiffDog, refer to the DiffDog documentation.

  Note: If the filter cannot be found, an error occurs and no comparison takes place.

- --doc-format-bold, --dt

  Applicable for comparison of Word documents. When set to `true`, bold formatting is taken into account for comparisons. Otherwise it is not. The default value is `false`.

- --doc-format-font-color, --dfc

  Applicable for comparison of Word documents. When set to `true`, font color is taken into account for comparisons. Otherwise it is not. The default value is `false`.

- --doc-format-font-name, --dff

  Applicable for comparison of Word documents. When set to `true`, font name is taken into account for comparisons. Otherwise it is not. The default value is `false`.

- --doc-format-font-size, --dfs

  Applicable for comparison of Word documents. When set to `true`, font size is taken into account for comparisons. Otherwise it is not. The default value is `false`.

- --doc-format-italic, --dfi

  Applicable for comparison of Word documents. When set to `true`, italic formatting is taken into account for comparisons. Otherwise it is not. The default value is `false`.

- --doc-format-underline, --dfi

Applicable for comparison of Word documents. When set to `true`, underline formatting is taken into account for comparisons. Otherwise it is not. The default value is `false`.

- --doc-ignore-blank-lines, --dib

  Applicable when comparing Word documents or directories containing Word documents. In the case of directory comparisons, the option will apply only to Word documents in that directory. When set to `true`, blank lines will be ignored during comparisons. Otherwise they are not. The default value is `false`.

- --doc-ignore-case, --dic

  Applicable when comparing Word documents or directories containing Word documents. In the case of directory comparisons, the option will apply only to Word documents in that directory. When set to `true`, case will be ignored during comparisons. Otherwise it is not. The default value is `false`.

- --doc-whitespace-mode, --dws

  This option is applicable when comparing Word documents or directories containing Word documents. In case of directory comparisons, the option will apply only to Word documents in that directory.

  The option defines how whitespace characters should be treated for comparison. Whitespace characters are any of the following: space, tab, carriage return, and line feed.

asis	(Default) Treat whitespace characters as is (that is, do not apply normalization or stripping). This means that whitespace characters are always relevant for comparison.
normalize	Text A is equal to Text B if, after normalization, characters in Text A correspond to those in Text B. “Normalization” means that multiple consecutive occurrences of whitespace characters are replaced by a single space character. In addition, the leading and trailing whitespace characters are trimmed for each line of text.
strip	Text A is considered equal to Text B if, after stripping whitespace characters, characters in Text A correspond to those in Text B. In other words, any whitespace characters are stripped from the text and considered not relevant for comparison.

- --ignore-blank-lines

  This option specifies if blank lines should be ignored in comparison. Valid values are `true` and `false`. The default value is `false`.

  The option applies depending on the current `--mode` option. If `--mode=text`, it applies to text files, and is equivalent to the `--text-ignore-blank-lines` option. If `--mode=xml`, it does not affect the comparison. If `--mode=doc`, it applies to Word documents and is equivalent to `--doc-ignore-blank-lines` option. If you do a directory comparison, it applies to each kind of comparison that might occur in that directory.

- --ignore-case

  This option is applicable to both file and directory comparisons. The option applies depending on the current `--mode` option. If `--mode=text`, it applies to text files and is equivalent to the `--text-ignore-case` option. If `--mode=xml`, it applies to XML files and is equivalent to `--xml-ignore-case-in-names` and `--xml-ignore-case-in-text` options. If `--mode=doc`, it applies to Word documents and is equivalent to

the `--doc-ignore-case` option. If you do a directory comparison, it applies to each kind of comparison that might occur in that directory.

When set to `true`, case will be ignored during comparisons. Otherwise it is not. The default value is `false`.

- --loglevel, --L

Sets the reporting level to show information, warning, or error messages. Valid values are:

- *none:* Suppress all logging
- *info:* Report information, warning, and error messages
- *warning:* Report error and warning messages
- *error:* (Default) Report only error messages

- --mode, --m

Specifies the comparison type to be performed. The option and its values (given below) can be applied to both file and directory comparisons. In the case of directory comparisons, the default "auto" option is a "quick" comparison. It compares files in the directory and its sub-directories by size and date modified. Selecting any of the other values for directory comparisons does the comparison with file contents treated as the selected value (for example, as XML files).

auto	(Default) Let the application determine if the supplied arguments are files or directories and set the comparison mode automatically based on file extension. For example, if files are detected to be XML, then an XML comparison is performed. You can always view or change the default mapping between specific file extensions and comparison modes, see Client Configuration File 41.
binary	Treat files as binary.
doc	Treat files as Microsoft Word documents.
text	Treat files as text.
xml	Treat files as XML.

- --output-file, --o

This option enables you to write the command output to a text file on the client machine. The value must specify a valid file path on the client machine. Use the `--om` option to set the output file format.

- --output-mode, --om

Specifies the output format of the generated report. The following values are available: `auto` (default option), `text`, `xml`, `html`.

Note: The option `--output-mode=text` is not supported when comparing XML files or Word documents.

- --port

Specifies the port on which DiffDog Server listens for requests. If this option is not set, then the port specified in the Client Configuration File 41 will be used (`29800` by default). The `--port` option overrides

the setting in the config file.

- --quiet, --q

  Prevents the standard output from being displayed at the command line. Valid values are:

  - *true:* Do not display standard output in the terminal window.
  - *false:* (Default) Display standard output in the terminal window.

- --server

  Specifies the server on which DiffDog Server listens for requests. If this option is not set, then the server specified in the Client Configuration File[41] will be used (`127.0.0.1` by default). The `--server` option overrides the setting in the config file.

- --server-output-file, --s

  This option enables you to write the command output to a text file on the server machine. The value must specify a valid file path on the server machine. Use the `--om` option to set the output file format.

- --server-left, --sl

  This option enables you to add a remote path to the comparison. It specifies the left side of the comparison (a path to a file or directory accessible to the server).

- --server-middle, --sm

  This option enables you to add a remote path to the comparison. It specifies the middle side of the comparison (applicable in a 3-way comparison). The value must be a path to a file or directory accessible to the server.

- --server-right, --sr

  This option enables you to add a remote path to the comparison. It specifies the right side of the comparison (a path to a file or directory accessible to the server).

- --text-ignore-case, --ic

  This option is applicable when comparing text documents or directories containing text documents. In case of directory comparisons, the option will apply only to text files in that directory. When set to `true`, case will be ignored during comparisons. Otherwise it is not. The default value is `false`.

- --text-ignore-blank-lines, --ib

  This option is applicable when comparing text documents or directories containing text documents. In case of directory comparisons, the option will apply only to text files in that directory. The option specifies whether blank lines should be ignored when comparing text files. Valid values are `true` and `false`. The default value is `false`.

- --text-whitespace-mode, --tws

  This option is applicable when comparing text documents or directories containing text documents. In case of directory comparisons, the option will apply only to text files in that directory.

The option defines how whitespace characters should be treated for comparison. Whitespace characters are any of the following: space, tab, carriage return, and line feed.

asis	(Default) Treat whitespace characters as is (that is, do not apply normalization or stripping). This means that whitespace characters are always relevant for comparison.
normalize	Text A is equal to Text B if, after normalization, characters in Text A correspond to those in Text B. “Normalization” means that multiple consecutive occurrences of whitespace characters are replaced by a single space character. In addition, the leading and trailing whitespace characters are trimmed for each line of text.
strip	Text A is considered equal to Text B if, after stripping whitespace characters, characters in Text A correspond to those in Text B. In other words, any whitespace characters are stripped from the text and considered not relevant for comparison.

- --whitespace-mode, --ws

  This option is applicable to file and directory comparisons. The option applies depending on the current `--mode` option. If `--mode=text`, it applies to text files, and is equivalent to the `--text-whitespace-mode` option. If `--mode=xml`, it applies to XML files. If `--mode=doc`, it applies to Word documents and is equivalent to `--doc-whitespace-mode` option. If you do a directory comparison, it applies to each kind of comparison that might occur in that directory based on the file extension.

  The option defines how whitespace characters should be treated for comparison. Whitespace characters are any of the following: space, tab, carriage return, and line feed.

asis	(Default) Treat whitespace characters as is (that is, do not apply normalization or stripping). This means that whitespace characters are always relevant for comparison.
normalize	Text A is equal to Text B if, after normalization, characters in Text A correspond to those in Text B. “Normalization” means that multiple consecutive occurrences of whitespace characters are replaced by a single space character. In addition, the leading and trailing whitespace characters are trimmed for each line of text.
strip	Text A is considered equal to Text B if, after stripping whitespace characters, characters in Text A correspond to those in Text B. In other words, any whitespace characters are stripped from the text and considered not relevant for comparison.

  If the compared files are XML, normalization and stripping affects whitespace characters that are inside attribute or element values. Other whitespace characters are disregarded.

- --xml-filter, --xf

  This option is applicable for XML comparisons. An XML filter contains rules that ignore specific XML attributes or elements for comparison. Valid values for this option are XML filters as they are defined in the

Client Configuration File[41], in the **[xml.filter]** group. For example, if the configuration file defines a filter **[xml.filter:ignore-abc-elems]**, the equivalent setting at the command line would be the option:

```
--xml-filter=ignore-abc-elems
```

On Windows, if DiffDog is installed on the same machine as DiffDog Server, then you can additionally specify any XML filter that already exists in DiffDog. For more information about creating directory filters with DiffDog, refer to the DiffDog documentation.

Note: If the filter cannot be found, an error occurs and no comparison takes place.

- --xml-ignore-case-in-names, --xicin

  This option is applicable when comparing XML files or directories containing XML files. In case of directory comparisons, the command will apply only to XML files in that directory. When set to `true`, a case-insensitive comparison of XML node names will be performed. The default value is `false`.

- --xml-ignore-case-in-text, --xicit

  This option is applicable when comparing XML files or directories containing XML files. In case of directory comparisons, the command will apply only to XML files in that directory. When set to `true`, a case-insensitive comparison of XML text nodes will be performed. The default value is `false`.

- --xml-ignore-markup-attributes, --xima

  This option is applicable when comparing XML files. Valid values:

true	Ignore XML attributes when comparing.
false	(Default) Take XML attributes into account when comparing.

- --xml-ignore-markup-comments, --ximc

  This option is applicable when comparing XML files. Valid values:

true	Ignore XML comments when comparing.
false	(Default) Take XML comments into account when comparing.

- --xml-ignore-markup-cdata, --ximcd

  This option is applicable when comparing XML files. Valid values:

true	Ignore XML character data (CDATA) when comparing.
false	(Default) Take XML CDATA into account when comparing.

- --xml-ignore-markup-doctype, --ximd

  This option is applicable when comparing XML files. Valid values:

true	Ignore XML DOCTYPE declaration when comparing.

false	(Default) Take XML DOCTYPE declaration into account when comparing.

- --xml-ignore-markup-processing-instructions, --ximpi

  This option is applicable when comparing XML files. Valid values:

true	Ignore XML processing instructions when comparing.
false	(Default) Take XML processing instructions into account when comparing.

- --xml-ignore-markup-xml, --ximx

  This option is applicable when comparing XML files. Valid values:

true	Ignore XML declarations when comparing.
false	(Default) Take XML declarations into account when comparing.

- --xml-ignore-namespace, --xins

  This option is applicable when comparing XML files. When set to `true`, XML namespaces will be ignored. The default value is `false`.

- --xml-ignore-prefixes, --xip

  This option is applicable when comparing XML files. When set to `true`, XML prefixes will be ignored. For example, let's assume that you want to compare the XML files below. Both files contain identical elements but the prefixes are different.

```
<left:table>
   <left:tr>
      <left:td>Name</left:td>
   </left:tr>
</left:table>
```

```
<right:table>
   <right:tr>
      <right:td>Name</right:td>
   </right:tr>
</right:table>
```

  By default, the `--xml-ignore-prefixes` option is `false`, which means the files will not be considered equal. However, if the option `--xml-ignore-prefixes` is set to `true`, then prefixes will be ignored and the files will be considered equal.

- --xml-ignore-text, --xit

  This option is applicable when comparing XML files. When set to `true`, the text content of XML nodes will be ignored for comparison. This is useful if you want to compare only the structure of two XML files, disregarding the actual node content. The default value is false.

- --xml-order-by-attributes, --xoba

  This option is applicable when comparing XML files. Set this option to `true` if you want all XML attributes to be ordered before comparison. For example, let's assume that you want to compare the following two XML files:

`<book author="Franz Kafka" title="The Metamorphosis"/>`	`<book title="The Metamorphosis" author="Franz Kafka"/>`

In the listing above, the order of attributes is different in both files, although the attributes are the same. If you set the option `--xml-order-by-attributes` to `true`, the application will order attributes before comparison, and, consequently, the files will be reported as equal. The default value is `false`, meaning that files are not equal if the order of attributes is not the same.

- --xml-order-by-elements, --xobe

  This option is applicable when comparing XML files. Set this option to `true` if you want all XML elements to be ordered before comparison. For example, let's assume that you want to compare the following two XML files:

`<book>`
`  <author>Franz Kafka</author>`
`  <title>The Metamorphosis</title>`
`</book>`
	`<book>`
	`  <title>The Metamorphosis</title>`
	`  <author>Franz Kafka</author>`
	`</book>`

  In the listing above, the left and right files contain exactly the same elements, only in a different order. If you set the option `--xml-order-by-elements` to `true`, the application will order all elements before comparison, and consequently, the files will be reported as equal. The default value is `false`, meaning that files are different if the order of elements is different.

- --xml-order-by-attribute-list, --xobl

  This option is applicable when comparing XML files. There are instances where multiple elements have exactly the same name and attributes, but attribute values are different. To sort by specific attributes before comparing, set this option to a named list of attributes created in the Client Configuration File 41, in the **`[xml.orderby:<name_of_your_list>]`** group.

  For example, let's assume that you want to compare the following two XML files:

`<data>`
`  <phone type="work" ext="111"/>`
`  <phone type="work" ext="222"/>`
`  <phone type="work" ext="333"/>`
`</data>`
	`<data>`
	`  <phone type="work" ext="333"/>`
	`  <phone type="work" ext="111"/>`
	`  <phone type="work" ext="222"/>`
	`</data>`

  In the listing above, the left and right files are not equal. However, if you ordered all `phone` elements by `ext` attribute, then the files would become equal. To make such comparisons possible, first modify the client configuration file as follows:

```
;; an example attributes list
[xml.orderby:mylist]
attributes = ext
```

You can now run the `diff` command with the option `--xml-order-by-attribute-list=mylist`. When you do this, the application orders elements by `ext` attribute, and, as a result, the files are reported as equal. If the option `--xml-order-by-attribute-list` is not set, files such as the ones above would be reported as NOT equal.

As an alternative, to order by all attributes, set the option `--xml-order-by-attributes=true` instead of setting this option.

Note: If you set the `--xml-order-by-attribute-list` option, make sure to also set the `--xml-order-by-elements=true`.

On Windows, when DiffDog is installed on the same machine as DiffDog Server, you can set this option to a custom attribute list created in DiffDog. For more information about creating custom attribute lists with DiffDog, refer to the DiffDog documentation.

- --xml-order-by-text, --xobt

  This option is applicable when comparing XML files. There are instances where multiple elements have exactly the same name and attributes; only the text of elements is different. Set this option to `true` if you want to order such elements by their inner text before comparison. For example, let's assume that you want to compare the following files:

`<data>`
`  <phone type="mobile">111</phone>`
`  <phone type="mobile">222</phone>`
`</data>`
	`<data>`
	`  <phone type="mobile">222</phone>`
	`  <phone type="mobile">111</phone>`
	`</data>`

  In the listing above, the left and right files are not equal. However, if you set the option `--xml-order-by-text` to `true`, the application would order elements by their text, and, as a result, the files would be reported as equal. The default value is `false`, meaning that ordering of elements by text does not take place, and files such as the ones above are not equal.

  Note: If you set the `--xml-order-by-text` option, make sure to also set the `--xml-order-by-elements=true`.

- --xml-resolve-entities, --xre

  This option is applicable when comparing XML files. When set to `true`, then all entities in the document are resolved. Otherwise, the files are compared with the entities as is. By default, this option is `false`.

- --xml-whitespace-mode, --xws

  This option is applicable when comparing XML documents or directories containing XML documents. In case of directory comparisons, the option will apply only to XML files in that directory.

  The option defines how whitespace characters should be treated for comparison. Whitespace characters are any of the following: space, tab, carriage return, and line feed. This option specifically affects whitespace characters that are inside element and attribute values. Whitespace characters that are outside attribute or element values are disregarded for comparison.

asis	(Default) Treat whitespace characters as is (that is, do not apply normalization

	or stripping). This means that whitespace characters are always relevant for comparison.
normalize	Text A is equal to Text B if, after normalization, characters in Text A correspond to those in Text B. "Normalization" means that multiple consecutive occurrences of whitespace characters are replaced by a single space character. In addition, the leading and trailing whitespace characters are trimmed for each line of text.
strip	Text A is considered equal to Text B if, after stripping whitespace characters, characters in Text A correspond to those in Text B. In other words, any whitespace characters are stripped from the text and considered not relevant for comparison.

- --zip-as-dir, --zd

  This option is applicable when comparing ZIP files. When set to `true`, ZIP files will be treated as directories instead of binary files. By default, this option is `false`.

Examples

To compare only local files or directories, supply them as arguments, which will be interpreted in the following index order. Two arguments (i) : left side, right side. Three arguments (ii): left side, middle, right side. While the `--mode` option is not mandatory, it is recommended to explicitly set it to either `text`, `binary`, or `xml`. In the first example above, it is set to `text` since two text files are being compared. In the second example, it is set to `xml`.

```
(i)  diffdogcmdlclient diff file1.txt file2.txt --mode=text
(ii) diffdogcmdlclient diff file1.xml file2.xml file3.xml --mode=text
```

Alternatively, you can specify the files to compare through options instead of arguments. For example, the command below supplies two XML files via options—not arguments. Note the client/server locations of the files

```
(i)  diffdogcmdlclient diff --client-left=file1.xml --client-right=file2.xml
(ii) diffdogcmdlclient diff --client-left=file1.xml --server-right=file2.xml --client-
right=file3.xml
```

The command below compares a file on the client with a file on the server. The file on the server is expected to be in a folder that has an alias of public. Further, it is assumed that this alias has already been defined by an administrator on the server[38].

```
diffdogcmdlclient diff --client-left=file1.txt --server-right=file2.txt --mode=text --
alias=public
```

To display a list of aliases defined on the server, run the `aliases`[81] command. To save an alias as default, set the `server-alias` option in the Client Configuration File[41]. This way, you will no longer need to specify an alias at the command line.

6.7 run, import, load

The **run**, **import**, or **load** command takes a DiffDog comparison file as its argument and runs a comparison on the objects defined in the comparison file. These comparison files are created in Altova DiffDog. The following types of DiffDog comparison file are accepted:

- **.dirdif** (which defines a directory comparison)
- **.filedif** (which defines a file comparison)
- **.dbdif** (which defines a database data comparison)

You can submit more than one comparison file as the command's argument. This enables multiple comparisons to be run with one call.

Important considerations

Note the following points about the comparison files when they are used as the arguments of this command.

Dirdif and Filedif files
Running **.filedif** and **.dirdif** files with DiffDog Server is supported only on Windows. For the comparison to be successful, all the file or directory paths that were valid on the desktop machine must be valid on the server machine.

Dbdif files
Running **.dbdif** files with DiffDog Server is most convenient if DiffDog Server runs either on the same computer as DiffDog desktop, or on a Windows machine. If DiffDog Server runs on a different machine or operating system, the following limitations apply:

- If the comparison involves CSV files, running .dbdif files is supported only on Windows servers. For the comparison to be successful, all the CSV file paths that were valid on the desktop machine must be valid on the server machine.
- If database connections are involved, the server machine must be configured and capable of handling the database connection. Namely, the database drivers and any other prerequisites required by the connection must be present on the target operating system as well. For example, if the **.dbdif** file includes a connection that requires an ODBC driver from the database vendor, that driver must be installed on the server machine as well. Note that some database connection methods supported on Windows are not supported on Linux and macOS. For more information, see Supported Databases 53.

Note: If, instead of using comparison files, you set up comparison jobs directly in DiffDog Server (with the `data-diff` 85 and `diff` 88 commands), then you can run the comparison jobs on any platform.

Output

Executing the `run` command returns the following:

- A return status code (**0** = no differences, **1** = differences, **2** = error).
- The comparison result, displayed directly at the command line unless suppressed with the `--quiet` option.

Redirecting the comparison result to file
The comparison result can optionally be redirected to file for all three types of comparison file.

- For **.filedif** and **.dirdif** comparisons, the comparison result can be redirected to a report file in XML or text format. The file's path is specified in DiffDog, in the *Output Path* setting of the comparison file. See the DiffDog documentation for more information.
- For **.dbdif** comparisons, the comparison result is available in XML format only. Use the command shell redirection, for example, like this:
  run `comparison.dbdif >"C:\result.xml"`

Syntax

diffdogserver `run [options] {FILES}`
diffdogcmdlclient `run [options] {FILES}`

Notes

- The `{FILES}` argument is a space-separated list of DiffDog comparison files in `.dirdif`, `.filedif`, or `.dbdif` format. The path to a file can be absolute or relative to the current working directory. The number of files you supply is limited only by the number of characters supported by your command shell.
- The `--server` and `--port` options apply to **diffdogcmdlclient** only. They specify the connection details of the server.

Options

--alias, --a

If the server administrator has restricted access to server paths for security reasons, comparisons cannot use server file paths directly but must use an alias that the server administrator has assigned. This is done by specifying the alias in the `--alias` option (of the `diff, compare` 88 and `run, import, load` 100 commands). *See Aliases for Server Folders* 38 *for more information about this feature.*

This option is meaningful if the comparison involves a server path (that is, if options `--server-left` or `--server-right` are set). Valid values for this option are aliases as defined in the Server Configuration File 39. To output the list of available aliases, run the `aliases` 81 command. For more information, see Restricting Access to Server Paths 38.

--config, --c

Specifies the path to a client configuration file where the details of the connection to DiffDog Server are defined

If you do not set the `--c` option, then **diffdogcmdlclient** attempts to read the client configuration file from the same directory as the executable. If there is no configuration file in the same directory, then the default values displayed by the `showcfg` 80 CLI command and in the topic Client Configuration File 41 are used.

--loglevel, --L

Sets the reporting level to show information, warning, or error messages. Valid values are:

- *none:* Suppress all logging
- *info:* Report information, warning, and error messages
- *warning:* Report error and warning messages
- *error:* (Default) Report only error messages

- --port

  Specifies the port on which DiffDog Server listens for requests. If this option is not set, then the port specified in the Client Configuration File[41] will be used (`29800` by default). The `--port` option overrides the setting in the config file.

- --server

  Specifies the server on which DiffDog Server listens for requests. If this option is not set, then the server specified in the Client Configuration File[41] will be used (`127.0.0.1` by default). The `--server` option overrides the setting in the config file.

- --quiet, --q

  Prevents the standard output from being displayed at the command line. Valid values are:

  - *true:* Do not display standard output in the terminal window.
  - *false:* (Default) Display standard output in the terminal window.

- --output-mode, --om

  Specifies the output format of the generated report. The following values are available: `auto` (default), `text`, `sql`, `xml`, `html`. The default option is `sql`.

  Generating the report in SQL format is meaningful when the right side of the data comparison is a database. It contains SQL statements that merge data from the left to the right side of the comparison. For example, if there are missing rows on the right, INSERT statements are generated. Conversely, if there are extra rows on the right, DELETE statements are generated. For changed values, UPDATE statements are generated.

  However, when the left side of the comparison is a database and the right side is a CSV file, then the default option is `text`.

Examples

The command below calls the DiffDog Client executable to run the comparison file **`C:\DiffDog\Comparison1.filedif`**:

```
DiffDogCmdlClient run C:\DiffDog\Comparison1.filedif
```

The command below calls the DiffDog Client executable to run the comparison files **`Comparison1.filedif`** and **`Comparison2.dirdif`**:

```
DiffDogCmdlClient run C:\DiffDog\Comparison1.filedif C:\DiffDog\Comparison2.dirdif
```

6.8 help

The **help** command provides contextual help.

Syntax

```
diffdogserver help [command]
diffdogcmdlclient help [command]
```

Notes

- The [command] argument is optional and specifies the command for which help is wanted.
- If **help** is used without the [command] argument, then all the commands of the executable are listed, each with a short description of the respective command.

6.9 version

The **version** command displays the version of the executable.

Syntax

```
diffdogserver version
diffdogcmdlclient version
```

7 Command Line for Admin (Server only)

The administration commands of DiffDog Server can be called by the server executable on the server. The syntax for these commands is:

```
diffdogserver [options] <command> [arguments]
```

Note the following points:

- The server executable, **diffdogserver.exe**, is located in the **bin** folder of the installation folder[35].
- On Linux, use an all-lowercase executable name.
- On Linux and macOS, you might need to add **./** before the name of the executable when calling it from the current directory of the command shell.

Admin commands

The administration commands of DiffDog Server are listed below and described in detail in the topics of this section.

7.1 accepteula (Linux only)

Syntax and description

In order to be able to run DiffDog Server, the application's end user license agreement (EULA) must be accepted. You can accept the application's EULA by running the **accepteula** command.

This command is useful, for example, if you want to license and run DiffDog Server directly via automated processes that use scripts.

```
diffdogserver accepteula [options]
```

- The command works only for Altova server products that have been installed on Linux machines.
- You must register DiffDog Server with LicenseServer before running the **accepteula** command.
- Use the **--h, --help** option to display information about the command.
- Use lowercase `diffdogserver`.
- Use forward slashes on Linux.

Examples

Examples of the **accepteula** command:

```
diffdogserver accepteula
```

7.2 assignlicense

Syntax and description

The **assignlicense** command uploads a license file to the Altova LicenseServer with which DiffDog Server is registered (see the `licenseserver` command), and assigns the license to DiffDog Server. It takes the path of a license file as its argument. The command also allows you to test the validity of a license.

```
diffdogserver assignlicense [options] FILE
```

- The *FILE* argument takes the path of the license file.
- The `--test-only` option uploads the license file to LicenseServer and validates the license, but does not assign the license to DiffDog Server.

For details about licensing, see the LicenseServer documentation (https://www.altova.com/manual/en/licenseserver/3.17/).

Examples

Examples of the `assignlicense` command:

```
diffdogserver assignlicense C:\licensepool\mylicensekey.altova_licenses
diffdogserver assignlicense --test-only=true C:\licensepool\mylicensekey.altova_licenses
```

- The first command above uploads the specified license to LicenseServer and assigns it to DiffDog Server.
- The last command uploads the specified license to LicenseServer and validates it, without assigning it to DiffDog Server.

Options

Options are listed in short form (if available) and long form. You can use one or two dashes for both short and long forms. An option may or may not take a value. If it takes a value, it is written like this: **--option=value**. Values can be specified without quotes except in two cases: (i) when the value string contains spaces, or (ii) when explicitly stated in the description of the option that quotes are required. If an option takes a Boolean value and no value is specified, then the option's default value is `TRUE`. Use the **--h, --help** option to display information about the command.

▼ test-only [t]

--t, --test-only = `true|false`

Values are `true|false`. If `true`, then the license file is uploaded to LicenseServer and validated, but not assigned.

7.3 createconfig

The **createconfig** command creates a server configuration file[39] with default settings for all options in the application data folder[35].

Syntax

```
diffdogserver createconfig [options]
```

Notes
Running this command without specifying the `--force` option will overwrite any existing configuration file in the application data folder[35]. If you do not want to do this, set the `--force` option to `false`.

Options

- --force, --f

  Values are `true|false`. If `true`, then any existing server configuration file in the application data folder[35] will be overwritten. If `false`, then a new server configuration file will be created—but only if one doesn't exist already. The default value is `true`.

- --lang

  Sets the value of the `language` parameter in the configuration file. Valid values are `en`, `es`, `de`, `fr`, `ja`.

Examples

To create a default configuration file and set the command line interface language to German, use:

```
diffdogserver createconfig --lang=de
```

7.4 foreground

The `foreground` command runs the server in console mode (as a command line app, not as a service).

Syntax

```
diffdogserver foreground [options]
```

Notes

- Console mode is also the default start-up mode if you invoke the executable without specifying a command.
- To stop running DiffDog Server in console mode, press **Ctrl+C**.

Options

- --config, --c

  Specifies the path to a server configuration file[39].

- --loglevel, --L

  Sets the reporting level to show information, warning, or error messages. Valid values are:

  - *none:* Suppress all logging
  - *info:* Report information, warning, and error messages
  - *warning:* Report error and warning messages
  - *error:* (Default) Report only error messages

- --port

  Specifies the port on which DiffDog Server listens for requests. If this option is not set, then the port specified in the Client Configuration File[41] will be used (`29800` by default). The `--port` option overrides the setting in the config file.

Examples

To start the executable in console mode, use:

```
diffdogserver foreground
```

7.5 install (Windows only)

The **install** command installs DiffDog Server as a service on the server machine. To uninstall DiffDog Server as a service, use the uninstall 112 command.

Syntax

```
diffdogserver install
```

7.6 licenseserver

Syntax and description

The **licenseserver** command registers DiffDog Server with the Altova LicenseServer specified by the *Server-Or-IP-Address* argument. For the licenseserver command to be executed successfully, the two servers (DiffDog Server and LicenseServer) must be on the same network and LicenseServer must be running. You must also have administrator privileges in order to register DiffDog Server with LicenseServer.

diffdogserver licenseserver *Server-Or-IP-Address*

- The *Server-Or-IP-Address* argument takes the name or IP address of the LicenseServer machine.

Once DiffDog Server has been successfully registered with LicenseServer, you will receive a message to this effect. The message will also display the URL of the LicenseServer. You can now go to LicenseServer to assign DiffDog Server a license. For details about licensing, see the LicenseServer documentation (https://www.altova.com/manual/en/licenseserver/3.17/).

Examples

Examples of the **licenseserver** command:

```
diffdogserver licenseserver DOC.altova.com
diffdogserver licenseserver localhost
diffdogserver licenseserver 127.0.0.1
```

The commands above specify, respectively, the machine named DOC.altova.com, and the user's machine (localhost and 127.0.0.1) as the machine running Altova LicenseServer. In each case, the command registers DiffDog Server with the LicenseServer on the machine specified. The last command calls the server-executable to execute the command.

7.7 uninstall (Windows only)

The **uninstall** command uninstalls DiffDog Server as a service on the server machine. To re-install DiffDog Server as a service, use the install 110 command.

Syntax

```
diffdogserver uninstall
```

7.8 verifylicense

Syntax and description

The **verifylicense** command checks whether the current product is licensed. Additionally, the `--license-key` option enables you to check whether a specific license key is already assigned to the product.

```
diffdogserver verifylicense [options]
```

- To check whether a specific license is assigned to DiffDog Server, supply the license key as the value of the `--license-key` option.

For details about licensing, see the LicenseServer documentation (https://www.altova.com/manual/en/licenseserver/3.17/).

Examples

Example of the **verifylicense** command:

```
diffdogserver verifylicense
diffdogserver verifylicense --license-key=ABCD123-ABCD123-ABCD123-ABCD123-ABCD123-ABCD123
```

- The first command checks whether DiffDog Server is licensed.
- The second command checks whether DiffDog Server is licensed with the license key specified with the `--license-key` option.

Options

Options are listed in short form (if available) and long form. You can use one or two dashes for both short and long forms. An option may or may not take a value. If it takes a value, it is written like this: **--option=value**. Values can be specified without quotes except in two cases: (i) when the value string contains spaces, or (ii) when explicitly stated in the description of the option that quotes are required. If an option takes a Boolean value and no value is specified, then the option's default value is `TRUE`. Use the **--h, --help** option to display information about the command.

▼ license-key [l]

--l, --license-key = *Value*
Checks whether DiffDog Server is licensed with the license key specified as the value of this option.

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